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SOLID WASTE MANAGEMENT PLAN

Rhode Island Statewide Planning Program

Prepared for:

Environmental Protection Agency

December 1973

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This report discusses solid waste management problems in Rhode Island, establishes basic goals for the direction of the state's future solid waste programs, and recommends the establishment of mechanisms required to initiate these future programs. The appendix contains draft legislation which, in amended form, became effective July 1, 1974.

17. Key Words and Document Analysis. 17a. Descriptors

RESOURCE RECOVERY 1407

UF Materials Recovery

REFUSE 1302=

UF Trash
BT Wastes
NT Garbage
RT Refuse Disposal

REFUSE DISPOSAL 1302

BT Waste Disposal
RT Incinerators

17b. Identifiers/Open-Ended Terms

RESOURCE RECOVERY SYSTEMS
SANITARY LANDFILLS
SOLID WASTE MANAGEMENT:
Generation
Source Reduction
Source Seperation
Collection
Transfer Stations
Waste Processing FAcilities
Energy and Materials Recovery
Ultimate Disposal

17c. COSATI Field/Group

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SOLID WASTE MANAGEMENT PLAN

December, 1973

Prepared by the
Governor's Environmental Task Force
Rhode Island Statewide Planning Program
Rhode Island Department of Health

ABSTRACT

TITLE: Solid Waste Management Plan

SUBJECT: The development of a state program for effective waste management

DATE: December 15, 1973

SOURCE OF COPIES:
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265 Melrose Street
Providence, Rhode Island 02907

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ABSTRACT:

This report discusses solid waste management problems in Rhode Island, establishes basic goals for the direction of the state's future solid waste programs, and recommends the establishment of the mechanism required to initiate these future programs.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
GOVERNOR'S ENVIRONMENTAL TASK FORCE
c/o THE RHODE ISLAND STATEWIDE PLANNING PROGRAM
265 Melrose Street
Providence, Rhode Island 02907

The Honorable Philip W. Noel
Governor of the State of
Rhode Island and Providence
Plantations
State House
Providence, Rhode Island

Dear Governor Noel:

Transmitted herewith is the final report of the Governor's Environmental Task Force on the development of a solid waste management plan for Rhode Island. This report represents about eight months' work by the Task Force and staff members of both the Rhode Island Statewide Planning Program and the state Department of Health, and I am pleased to submit it for your consideration.

In brief, this report contains the following major recommendations:

1. The creation of a solid waste management corporation that will, in conjunction with the Health Department, serve as the basic mechanism for carrying out the state's future solid waste management activities and programs.

2. Assigning the corporation the major task of planning and developing an integrated statewide system of solid waste management facilities, and establishing a resource recovery operation for reclaiming the valuable energy and material resources contained in the waste stream delivered to its facilities.

3. The creation of a citizens advisory board to advise the corporation in matters pertaining to resource recovery and recycling.

4. The encouragement of private industry to continue playing a key role in the state's solid waste management program.

5. The implementation, by the Department of Health, of a solid waste management facility licensing program.

The report further recommends that municipal participation in the state system be on a voluntary basis and that each municipality be free to solve its own disposal problems providing this can be accomplished within its own boundaries and in a manner consistent with Department of Health regulations.

These recommendations should prove to be beneficial to the people of Rhode Island for a number of reasons. First, the proposed statewide system of solid waste management facilities will guarantee that each municipality in the state has access to an environmentally acceptable solid waste disposal facility. Second, the regionalization of landfill facilities, and the reduction in the amount of waste that has to be landfilled through processing and resource recovery activities, will result in a significant reduction in the amount of land used for this purpose, throughout the state. Third, the recovery and recycling of valuable energy and material resources contained in the waste stream will play an increasingly significant role in helping to sustain Rhode Island's economic growth. Fourth, the cost of the program, to the communities, will be competitive with other environmentally acceptable options available to them because of the regional economies that can be achieved by the state system, the low cost borrowing powers of the corporation, and the revenues produced through the sale of recovered resources.

While it is intended that the corporation's activities be financed through the revenue it generates, and through the issuance of revenue bonds which wibl not require pledging the state's credit, it is foreseen that start up funding is needed to cover the cost of the first three years of its operation.

We recommend, therefore, that the corporation upon creation, be given a loan from the state of $1,700,000, to be repaid in a ressonable period of time. Of this amount, approximately $510,000 would be allocated to staff and general administration expenses including the hiring of consultants to perform the required planning; $650,000 would be used to finance those projects that will have to be launched at the outset; and, $500,000 would be allocated to a special fund to be used for interest payments on the revenue bonds that will be issued by the corporation in the future.

Appended to this report are drafts of the legislation required to implement these recommendations. The legislative package includes a draft bill creating the corporation and detailing its responsibilities and a draft bill supplementing the existing powers and authority of the Department of Health. It also contains other [illegible] draft legislation intended to void existing legislation which is in conflict with our proposals.

We sincerely hope that you give this recommended plan, and legislative package, your immediate consideration and support.

Respectfully submitted,

Edward P. Manning

Rep. Edward P. Manning
Chairman, Governor's Environmental
Task Force

EPM/LCD/vl

PREFACE

This plan fulfills the planning requirements and conditions of the agreement entered into by the Rhode Island Department of Health with the United States Environmental Protection Agency. Financial assistance in developing this plan was provided under Federal Grant Number 14-2-605-01-00012-0351.

In developing this plan the following specific tasks were undertaken and completed:

a. A review and analysis of data pertinent to solid waste management.

b. A forecast of future refuse loads and an analysis of changing problems.

c. The establishment of short and long range solid waste management objectives for the entire state, and the development of the management structure necessary to implement these objectives.

d. The development of required implementing legislation.

e. The development of technical assistance and enforcement programs which will serve to achieve compliance with existing and proposed legislation.

This report represents the combined efforts of the Governor's Environmental Task Forece, under the chairmanship of Rep. Edward P. Manning of Cumberland, the Rhode Island Statewide Planning Program of the Department of Administration, and the Division of Solid Waste Management of the Department of Health, with the assistance of Gordian Associates, Incorporated.

The Governor's Environmental Task Force is comprised of the following members:

Rep. Edward P. Manning	Chairman, Joint Legislative Committee on the Environment (Chairman)
Rep. Alfred Travers, Jr.	Chairman, House Finance Committee (Vice Chairman)
Daniel W. Varin	Chief, Statewide Planning Program - Department of Administration (Secretary)

*Alexander A. DiMartino	Chairman, Water Resources Board
Calvin B. Dunwoody	Chief, Division of Planning and Development-Department of Natural Resources
Stuart O. Hale	School of Oceanography, University of Rhode Island
Robert A. Harpell	Chairman, Council of Environmental Quality
Paul T. Hicks	Secretary, Coastal Resources Management Council
Carleton A. Maine	Chief, Division of Water Supply and Pollution Control-Department of Health
Robert B. Russ	General Manager, Water Resources Board
Frederick C. Williamson	Director, Department of Community Affairs

*Peter P. Calise, Principal Planner, Water Resources Board, served as Alexander D. Martino's designee in all solid waste management activities of the Task Force.

This report was prepared by Mr. Louis C. David, Jr., Principal Planner, and Mr. Robert J. DeSista, Planning Technician, of the Statewide Planning Program, assisted by Mr. John Quinn, Chief, Division of Solid Waste Management, Rhode Island Department of Health. Other members of the Statewide Planning Program staff who participated in this study were:

Jerome Lessuck	Assistant Chief
Bradford E. Southworth	Supervising Planner
Mansuet J. Giusti	P.E.A. - Map Drafting
Peter A. Ouimette	P.E.A. - Map Drafting
Anna Griffin	Senior Clerk-Typist
Veronica Lecuivre	Senior Clerk-Typist
Janice Luther	Senior Clerk-Typist
Gail A. Titherington	Senior Clerk-Typist

In the development of this plan the Task Force conducted a total of twenty formal sessions with fourteen business meetings open to the public and the press, and six executive work sessions. The Task Force met with representatives from the following public agencies, private firms, and organizations:

The Steering Committee of the Citizens Solid Waste Project

Northeast Recycling Company

U.S. Environmental Protection Agency

Connecticut Department of Environmental Protection

Washington County Council of Governments

United States Department of Interior, Bureau of Mines

Blackstone Valley Chamber of Commerce

Sanitas of Rhode Island

Sylvestri Brothers Sand and Gravel

Goditt and Boyer, Inc.

J & M Contractors

Lanway Refuse Pulverizers

South County Sanitation Service

United Paper Stock Company

Metals Processing Company

Star City Glass Company

AAA Construction Company

Resource Planning Associations, Cambridge, Mass.

Ecology Action of Rhode Island

Service Corporation of America

Gordian Associates, Inc., New York, N.Y.

Rhode Island League of Women Voters

The National Center for Resource Recovery

In addition, the Task Force met with representatives of twenty-one of the state's municipalities.

SUMMARY OF CONCLUSIONS, GOALS, AND RECOMMENDATIONS

Major Conclusions:

The major conclusions drawn from the study of the overall solid wast management problems of the state, and which form the basis of the actions recommended in this report, are as follows:

1. If the overall solid waste management problems of Rhode Island are to be effectively dealt with, this must be accomplished within the framework of an overall statewide program which successfully integrates all of the elements of the problem and provides for the required planning, regulatory, and management activities. The overall program must also provide for the effective coordination of these activities with related state, local, and private sector activities.

2. Many municipalities in Rhode Island are looking to the state for assistance in solving their solid waste problems.

3. At the present time there are approximately 1,600 tons of municipal waste generated daily in the state. By 1980, this figure is expected to approximate 2000 tons per day. This increase will result in growing pressures to reduce the amount of material that has to be disposed of in the ground.

4. A number of sanitary landfills will be required to serve the needs of the state in the forseeable future. At the present time, however, there are over forty land disposal facilities in Rhode Island and the majority of these are environmentally unacceptable.

5. The amount of solid waste that has to be disposed of in the ground must be decreased through processing and resource recovery operations.

6. On the basis of the fact that the technology for resource recovery exists now, and that there is an acknowledged and growing scarcity of virgin energy and material resources, it is concluded that the state must initiate a statewide resource recovery program.

7. The success of future state solid waste management programs will require the continued participation of private industry and the strong support of local government and citizens.

Goals:

The following solid waste management goals were developed in order to clearly define the parameters of the solid waste management problem as it exists in Rhode Island today, and to facilitate the determination of priorities for a solid waste management program.

1. Expand the state's overall involvement in the solid waste management area.
2. Seek long term, comprehensive solutions to all aspects of the state's solid waste managment problem.
3. Ensure that municipalities have access to environmentally acceptable facilities and that existing facilities which are unacceptable, are improved or replaced as soon as possible.
4. Reduce the number of disposal facilities, and the amount of land that is used for this purpose.
5. Recover valuable energy and material resources contained in the state's solid waste stream.
6. Ensure that immediate assistance to municipalities in need of such assistance in solving their solid waste disposal problems will be provided by the state at costs competitive with other environmentally acceptable alternatives available to them.
7. Encourage private industry to continue playing a leading role in the state's future solid waste management activities.
8. Ensure that a mechanism for effective participation of the private citizenry in solid waste management activities is provided.

Recommendations:

In order to achieve these goals the following major recommendations for the state's overall solid waste management program are made:

1. The creation of a state solid waste management corporation which, in conjunction with the Department of Health, will provide the basis for the state's involvement in the overall solid waste management area.

a) The corporation must be endowed with the authority and and flexibility to facilitate the accomplishment of its mission.

b) It must be capable of achieving financial self sufficiency through revenues obtained from user fees and from the sale of recovered energy and material resources.

c) It must have the capability to select and acquire sites and it should have the authority to construct and operate facilities but should first seek the involvement of private industry in these areas.

d) It must have the capability of performing the required planning research, education and promotion functions.

e) It must be capable of providing immediate and effective assistance to those municipalities who are in need of such assistance in the interim period prior to the implementation of the fully integrated state program.

f) The corporation must also have the ability to eventually meet the needs of all the municipalities with immediate authority to deal with inter-community solid waste management problems.

2. The development by the corporation, of an integrated statewide system of regional solid waste management facilities for the dual purpose of reducing the amount of waste that has to be landfilled, and the amount of land for this purpose.

3. The implementation by the Department of Health of a licensing program for solid waste management facilities.

4. The establishment of a state resource recovery operation based on the recovery of energy and material resources contained in the waste stream delivered to the corporation's facilities, and the encouragement of citizen participation in the recovery effort.

5. The creation of a citizen's advisory board whose function would be to advise the corporation on matters pertaining to solid waste management including resource recovery and recycling, and to make appropriate reports to the governor.

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PART ONE:

BACKGROUND FOR PLANNING

*Traditionally, the responsibility for disposal of solid waste has been that of the individual community, while the state's role in solid waste matters has been that of coordinating local plans, adopting and enforcing regulations, and providing general, technical, and financial assistance to local governmentts.

*The Governor's Environmental Task Force on April 23, 1973, with assistance from the Statewide Planning Program and the Department of Health, undertook the task of developing recommendations for greater state participation in solid waste management processing, and disposal activities.

*Calculations, based on population estimates, state employment percentages, and the latest figures from the Environmental Protection Agency show that the state will generate approximately 1615 tons of solid waste, including residential, commercial, and non-manufacturing industrial refuse per day in 1973.

*Twenty-one of the communities in Rhode Island have municipal collection services, either operated by municipal employees or by private companies under municipal contract.

*There are several publicly or privately owned and operated disposal facilities in the state including 40 landfills and 3 incinerators. Presently, there are plans to construct 2 additional incinerators.

The report further recommends that municipal participation in the state system be on a voluntary basis and that each municipality be free to solve its own disposal problems providing this can be accomplished within its own boundaries and in a manner consistent with Department of Health regulations.

These recommendations should prove to be beneficial to the people of Rhode Island for a number of reasons. First, the proposed statewide system of solid waste management facilities will guarantee that each municipality in the state has access to an environmentally acceptable solid waste disposal facility. Second, the regionalization of landfill facilities, and the reduction in the amount of waste that has to be landfilled through processing and resource recovery activities, will result in a significant reduction in the amount of land used for this purpose, throughout the state. Third, the recovery and recycling of valuable energy and material resources contained in the waste stream will play an increasingly significant role in helping to sustain Rhode Island's economic growth. Fourth, the cost of the program, to the communities, will be competitive with other environmentally acceptable options available to them because of the regional economies that can be achieved by the state system, the low cost borrowing powers of the corporation, and the revenues produced through the sale of recovered resources.

While it is intended that the corporation's activities be financed through the revenue it generates, and through the issuance of revenue bonds which will not require pledging the state's credit, it is foreseen that start up funding is needed to cover the cost of the first three years of its operation.

We recommend, therefore, that the corporation upon creation, be given a loan from the state of $1,700,000, to be repaid in a reasonable period of time. Of this amount, approximately $510,000 would be allocated to staff and general administration expenses including the hiring of consultants to perform the required planning; $650,000 would be used to finance those projects that will have to be launched at the outset; and, $500,000 would be allocated to a special fund to be used for interest payments on the revenue bonds that will be issued by the corporation in the future.

Appended to this report are drafts of the legislation required to implement these recommendations. The legislative package includes a draft bill creating the corporation and detailing its responsibilities and a draft bill supplementing the existing powers and authority of the Department of Health. It also contains other

John Chafee, to study existing and potential disposal problems. He urged this task force to investigate methods of solid waste disposal and to make recommendations for a long range plan and a financing program to deal with the growing problem. The result was a report (Report of the Governors' Task Force on Refuse Disposal, February 1968) recommending a program for state and local action for planning, financing, constructing, and managing disposal facilities. This report led to the passage of the present Rhode Island Solid Waste Law (Chapter 23-46 of the General Laws of 1957 as ammended). This law has the following provisions:

1. The primary responsibility for refuse disposal lies with each city and town, including planning, providing needed facilities, and establishing rules and regulations pertaining to their use.

2. Local communities are required to "prepare a long range refuse disposal plan and program including the location, design concept and estimated cost of facilities to be provided."

3. The State Department of Health is charged with the responsibility for coordinating local plans, adopting and enforcing rules and regulations, providing technical assistance and financial aid, and providing general assistance to local governments.

4. A grant-in-aid program was established apportioning funds annually totaling 40 cents per capita, as determined from the latest available federal census of population and employment tabulations prepared by the Department of Employment Security, among communities for refuse disposal facility design, construction, maintenenace, and operation to assist local government in providing high quality services. To encourage the joint use of refuse facilities by adjacent communities, a portion of the funds were made available in the form of regional incentives.

The above recommendations and legislation reiterates the contention that the prime responsibility for the adequate disposal of refuse lies with the municipality in which it is generated. They recognize the problems faced by local government in disposing of its solid waste. They also encourage communities to enter into cooperative agreements, and lend the weight, prestige, and in some cases, the financial support of the state, to assist local governments in solving their solid waste problems.

However, the recommendations and subsequent legislation did not constitute a framework level plan for solid waste disposal as determined by the federal government. Also, the value of a resource recovery operation was not entirely understood at that time, and was not fully considered.

The expectation of the 1968 study was that the planning process would continue and that the complex plans and regulations would be established over a period of time.

Further action occurred in 1971 when regulatory activities for solid waste management were transferred from the Department of Health to the Public Utilities Commission in response to an amendment to Chapter 39-20 of the General Laws. This law was repealed at the next session of the General Assembly and the regulatory function for solid waste reverted to the Department of Health.

The Governor's Environmental Task Force, formed by Governor Frank Licht in August, 1972, undertook the task, on April 23, 1973, of developing recommendations for greater state participation in solid waste management activities. At approximately the same time, the state Department of Health and the Rhode Island Statewide Planning Program started negotiations with the federal Environmental Protection Agency for a grant to assist in developing a state framework level solid waste management plan. This grant was received July 1, 1973.

B. The Solid Waste Stream in Rhode Island

The following inventory of data represents an approach to the determination of the volume and composition of the solid waste stream in Rhode Island. This data has been developed for the purpose of providing appropriate background information only. It must be noted, that these figures portray approximations, and thus are inadequate as a basis for system design purposes.

Table 2 presents an estimation of the geographic distribution of solid waste generation in Rhode Island. The figures are based on the most recent Environmental Protection Agency estimates on waste generation dervided from national averages. They are given in tons generated per day for each city and town, and were developed on the following basis:

1. The 1973 and 1980 population estimates for each city and town, taken from Table 1.
2. The latest E.P.A. generation estimates which state that 3.32 pounds of solid waste is generated per capita per day, 65 percent (2.16 lbs.) of which is determined to

TABLE 1

RHODE ISLAND PRELIMINARY POPULATION PROJECTIONS TO 1990[1] BY CITY AND TOWN

(in thousands)

Town of City Name	1973	1980	1990
Barrington	18.3	20.2	23.6
Bristol	18.2	19.0	20.6
Burrillville	10.3	10.8	11.7
Central Falls	18.8	19.2	20.6
Charlestown	3.2	3.6	4.5
Coventry	24.5	28.0	32.1
Cranston	75.9	80.0	86.0
Cumberland	28.6	33.0	40.0
East Greenwich	10.4	12.5	16.6
East Providence	50.5	55.5	63.1
Exeter	3.4	3.8	4.8
Foster	2.8	3.2	4.0
Glocester	5.7	6.7	7.7
Hopkinton	5.6	6.2	7.1
Jamestown	3.0	3.3	3.7
Johnston	23.6	26.6	30.7
Loncoln	16.6	17.6	19.3
Little Compton	2.5	2.6	3.0
Middletown	30.3	34.5	38.1
Narragansett	7.6	8.5	9.5
Newport	34.8	36.5	41.0
New Shoreham	.5	.5	.6
North Kingstown	30.5	32.4	35.5
North Providence	25.6	28.4	32.1
North Smithfield	9.7	10.6	12.6
Pawtucket	76.9	78.6	83.1
Portsmouth	13.3	15.0	17.5
Providence	175.4	175.5	187.0
Richmond	2.7	3.0	3.5
Scituate	7.9	9.1	10.2
Smithfield	14.7	16.8	19.8
South Kingstown	17.5	18.6	21.0

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[1] Source: Rhode Island Statewide Planning Program - March, 1972 Preliminary Projections

TABLE 1 (CONT.)

Town or City Name	1973	1980	1990
Tiverton	13.6	15.3	17.4
Warren	10.9	11.7	13.3
Warwick	88.1	96.0	105.9
Westerly	18.2	20.1	23.5
West Greenwich	2.0	2.4	2.9
West Warwick	24.5	25.3	26.7
Woonsocket	46.4	46.3	46.5
State Total	972.7	1036.9	1146.8

be residential refuse, with the remaining 35 Percent (1.16 lbs.) being made up of commercial and non-manufacturing wastes. This per capita figure was assumed to be increasing at the rate of 2 percent per year.

3. The average 1972 distribution of employment for each city and town. This data was provided by the Rhode Island Department of Employment Security.

This data was used in the following manner to determine the figures in Table 2.

1. Residential Generation:

community population X 2.16 lbs. per city and town ÷ 2,000= tons generated per community per day for 1973

2. Commercial and Non-manufacturing generation:

state population X 1.16 lbs. per capita per day X percent of state employment by city and town + 2,000 = tons generated per community per day for 1973

3. Total Generation:

residential wastes + commercial and non-manufacturing wastes = total tons generated per community per day for 1973

Non-manufacturing wastes are those wastes generated during the commercial operation of an industrial plant, such as waste paper and cardboard cartons. These do not include industrial wastes, such as rubber or metal scrap, that are generated during the processing or manufacture of a product. These latter industrial wastes in addition to agricultural, demolition, and hazardous refuse constitute a substantial portion of the wastes generated in Rhode Island. This is an area where a great deal more research is required.

Table 3 presents the breakdown of the waste stream by composition. This was based on information provided by the Environmental Protection Agency and reflects national averages, hence it cannot be used for design purposes. Using the data from Table 2 and Table 3, the composition of the present and future waste stream in Rhode Island would be as presented in Table 4.

C. Municipal Collection Practices in Rhode Island

The information provided in this section is a survey of present solid waste collection practices in Rhode Island. Table 5 indicates the type and schedule of municipal collection systems, where existing, in the state. The table shows that, of the twenty-one

TABLE 2

ESTIMATED SOLID WASTE GENERATION IN RHODE ISLAND

(Figures given in tons per day)

Town or City Name	1973 Residential	1973 Commercial & Non-Mfg. Industrial[1]	1973 Total	1980 Total
Barrington	19.76	2.75	22.51	28.21
Bristol	19.66	7.06	26.72	32.00
Burrillville	11.13	2.32	13.45	16.11
Central Falls	20.31	12.04	32.35	38.34
Charlestown	3.46	.45	3.91	4.98
Coventry	26.46	7.24	33.70	43.29
Cranston	81.97	27.29	109.26	131.76
Cumberland	30.89	11.06	41.95	54.11
East Greenwich	11.23	5.38	16.61	21.94
East Providence	54.54	30.02	84.56	104.95
Exeter	3.67	.13	3.80	4.83
Foster	3.03	.26	3.29	4.26
Glocester	6.16	.68	6.84	9.07
Hopkinton	6.05	1.61	7.66	9.60
Jamestown	3.24	.36	3.60	4.50
Johnston	25.49	6.95	32.44	41.21
Lincoln	17.93	7.69	25.62	31.05
Little Compton	2.70	.24	2.94	3.49
Middletown	32.73	3.55	36.28	46.78
Narragansett	8.21	1.35	9.56	12.11
Newport	37.59	10.12	47.71	57.26
New Shoreham	.54	.20	.74	.86
North Kingstown	32.94	7.42	40.36	48.93
North Providence	27.65	8.64	36.29	45.48
North Smithfield	10.48	5.56	16.04	19.83
Pawtucket	83.05	64.60	147.65	175.64
Portsmouth	14.37	5.97	20.34	25.74
Providence	189.43	226.14	415.57	492.25
Richmond	2.92	1.40	4.32	5.40
Scituate	8.53	.98	9.51	12.38
Smithfield	15.88	6.54	22.42	28.66
South Kingstown	18.90	5.06	23.96	29.06
Tiverton	14.69	2.02	16.71	21.29
Warren	11.77	7.04	18.81	22.99
Warwick	95.15	37.68	132.83	164.13
Westerly	19.66	9.01	28.67	35.74
West Greenwich	2.16	.11	2.27	3.09
West Warwick	26.46	10.00	36.46	43.34
Woonsocket	50.11	25.78	75.89	88.46
State Total	1050.52	564.17	1614.69	1964.93

[1] Excludes wastes resulting from the manufacturing process

TABLE 3

LATEST (10/23/73) EPA FIGURES ON WASTE GENERATION

Total Generation: 3.32 lbs. per person per day
(includes residential, commercial and non-manufacturing industrial)

Breakdown	As Generated
Paper	31.3%
Glass	9.7
Non-Ferrous Metal	1.0
Ferrous Metal	8.6
Plastics	3.4
Rubber & Leather	2.6
Textiles	1.4
Wood	3.7
Yard	19.3
Food	17.6
Misc. inorganic	1.4

TABLE 4

COMPOSITION OF THE SOLID WASTE STREAM IN RHODE ISLAND

Breakdown	Percent[1]	Tons Per Day	
		1973	1980[2]
Paper	31.3%	505.40	615.02
Glass	9.7	156.62	190.60
Non-Ferrous Metal	1.0	16.15	19.65
Ferrous Metal	8.6	138.86	168.98
Plastics	3.4	54.90	66.81
Rubber & Leather	2.6	41.98	51.09
Textiles	1.4	22.61	27.51
Wood	3.7	59.74	72.70
Yard Wastes	19.3	311.63	379.23
Food	17.6	284.19	345.83
Misc. inorganic	1.4	22.61	27.51
Total	100 %	1614.69	1964.93

1. Taken from Table 3

2. The 1980 figures shown above were based on the same percentages as were the 1973 figures

TABLE 5

SOLID WASTE COLLECTION PRACTICES IN RHODE ISLAND

Town or City Name	Type of Service	Combined Collection	Garbage Collection	Other Refuse Collection
Barrington	ME	1/W		
Bristol	ME		1/W	2/M
Burrillville	NS			
Central Falls	ME	1/W		
Charlestown	NS			
Coventry*	NS			
Cranston	MP	1/W		
Cumberland	MP		1/W	1/W
East Greenwich	MP	1/W		
East Providence	MP	1/W		
Exeter	NS			
Foster	NS			
Glocester	NS			
Hopkinton	NS			
Jamestown	NS			
Johnston	MP		1/W	1/M
Lincoln	ME	1/W		
Little Compton	NS			
Middletown	NS			
Narragansett	NS			
Newport	MP		2/W	1/W
New Shoreham	NS			
North Kingstown	NS			
North Providence	MP	1/W		
North Smithfield	ME	1/W		
Pawtucket	ME	1/W		
Portsmouth	NS			
Providence	ME	1/W		
Richmond	NS			
Scituate	MP	1/W		
Smithfield	MP	1/W		
South Kingstown	NS			
Tiverton	MP		2/W	1/W
Warren	ME		1/W	2/M
Warwick	ME	1/W		
Westerly	NS			
West Greenwich	NS			
West Warwick	ME	1/W		
Woonsocket	MP	1/W		

* Coventry is planning to have a combined collection 1/W

ME - Municipal employees
MP - Pick-up by private companies under municipal contract
NS - No municipal collection service
1/W - Once per week   2/W - Twice per week   2/M - Twice per month

communities with municipal collection services in Rhode Island, ten are operated by municipal employees, while eleven are operated by private companies under municipal contract. It also indicates that of those twenty-one communities with service, fifteen have a combined collection once per week. The remaining six municipalities have separate garbage and other refuse collections.

D. Solid Waste Disposal in Rhode Island

There are various publicly or privately owned and operated disposal facilities in the state including forty landfills and three incinerators. Presently, there are plans to construct two additional incinerators.

The tables presented in this section provide a summary of data on municipal disposal procedures (Table 6), and privately owned and operated disposal facilities (Table 7) in Rhode Island.

The information was obtained from the following sources:

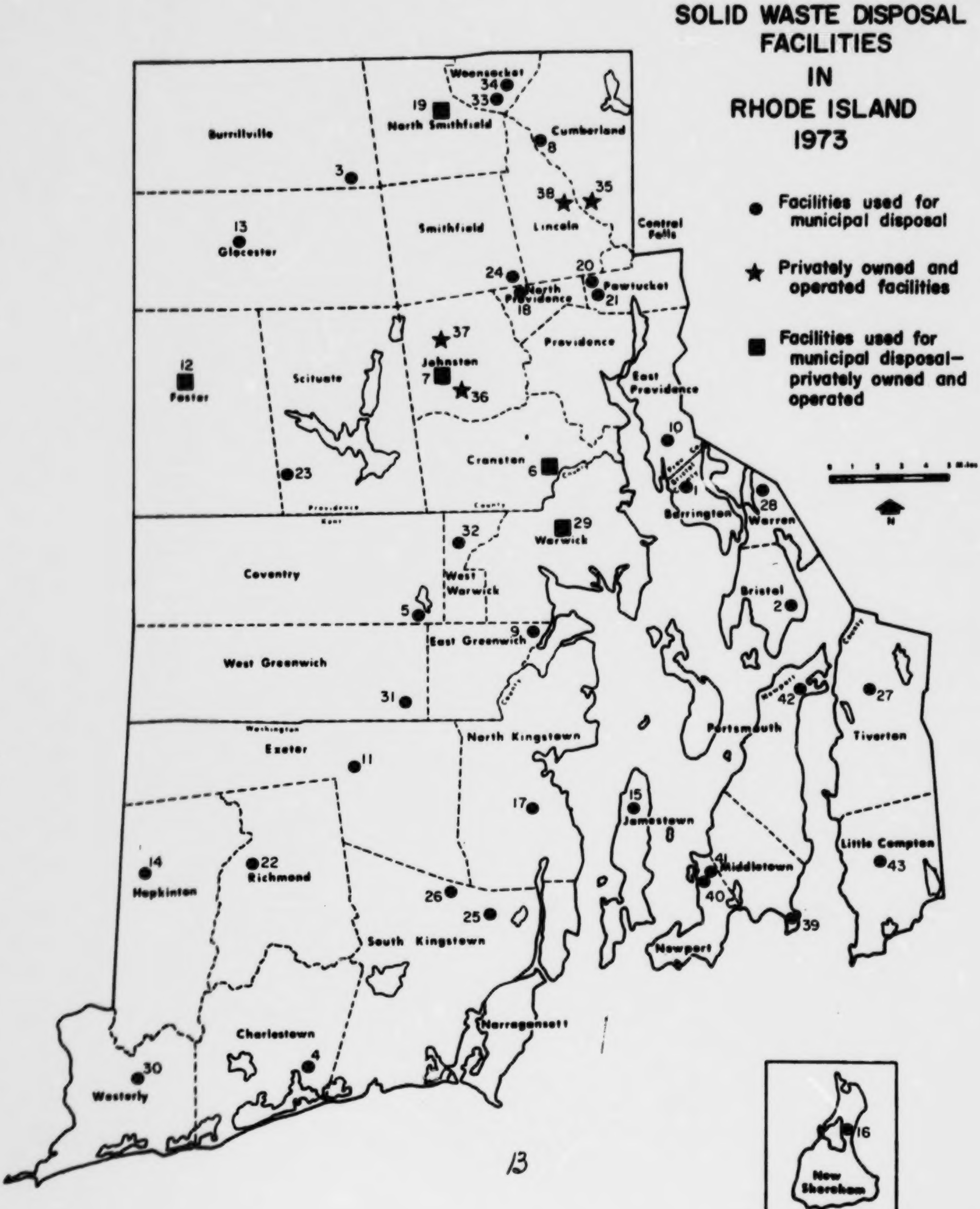
1. The state Department of Health
2. The Citizen's Steering Committee Task Force on Current Methods of Solid Waste Disposal
3. Rhode Island Statewide Planning Program
4. Rhode Island Water Resources Board
5. Individual city and town officials

Table 6 consists of a compilation of data on municipal practices for the disposal of their residential solid wastes. It gives the current method of disposal (by naming the facility) for each city and town in Rhode Island. Table 7 is a summary of privately owned and operated disposal facilities in Rhode Island. The site numbers on both tables correspond to the map showing general locations of the disposal facilities (Figure 1).

E. Municipal Solid Waste Expenditures

The following survey (Table 8) is a presentation of the estimated municipal solid waste collection and disposal costs in fiscal year 1972-73 with the resulting per capita cost for each community. In order to collect this data, a letter was sent to each city and town in Rhode Island on July 20, 1973 requesting

FIGURE 1



SOLID WASTE DISPOSAL FACILITIES IN RHODE ISLAND 1973

TABLE 6

COMMUNITY PRACTICES FOR THE DISPOSAL OF RESIDENTIAL WASTES (1973)

Site No.	Municipality	Current Method of Disposal	Year Placed in Operation	Size in Acres	Approx. Life Remaining in Years[1]	Adjacent Land Use[2]
1	Barrington	Upland Way Landfill	1970	9	3-5	R
2	Bristol	Bristol Landfill	1963	17	3	I
3	Burrillville	Burrillville Landfill	1966	8	10	R & I
-	Central Falls	Contract with Pawtucket Incinerator	--	--	--	--
4	Charlestown	Charlestown Landfill	NA	NA	5	R
5	Coventry	Coventry Landfill	1945	10	2	C & I
6	Cranston	a. A. Capuano Landfill	1928	40	20	R & I
7	Cranston	b. Silvestri's Sand & Gravel	1955	450	15	I
8	Cumberland	Cumberland Town Landfill	1954	15	5-7	R & I
9	East Greenwich	East Greenwich Disposal Area	1967	13	5	R & U
10	East Providence	East Providence Landfill	1969	200	20	R
11	Exeter	Exeter Town Landfill	1959	2	1	U
12	Foster	T & V Disposal Site	1969	5	1	A
13	Glocester	Glocester Town Landfill	1961	7	1-3	R
14	Hopkinton	Hopkinton Town Landfill	1965	10	NA	U
15	Jamestown	Jamestown Landfill	1967	4	1	A
7	Johnston	Silvestri's Sand & Gravel	1955	450	15	I
7	Lincoln	Silvestri's Sand & Gravel	1955	450	15	I
7	Little Compton**	a. Silvestri's Sand & Gravel	1955	450	15	I
43	Little Compton	b. Little Compton Landfill	NA	8	NA	U
39	Middletown*	Middletown Disposal Site	1932	30	0	R
-	Narragansett	Hauled to South Kingstown	--	--	--	--
40	Newport*	a. Incinerator[3]	1954	--	0	C & I
41	Newport*	b. Newport Disposal Site	1932	10	0	C & I
16	New Shoreham	New Shoreham Town Landfill	NA	4-6	NA	R & U

TABLE 6 (Con't)

Site No.	Municipality	Current Method of Disposal	Year Placed in Operation	Size in Acres	Approx. Life Remaining in Years[1]	Adjacent Land Use
17	North Kingstown	North Kingstown Landfill	1970	33	5-9	A & R
18	North Providence	North Providence Landfill	1963	38	2-4	R
19	North Smithfield	Fortune Landfill	1969	36	5-10	U
20	Pawtucket	a. Incinerator	1965	--	NA	I
21	Pawtucket	b. Landfill	1969	20	1-3	R & C
42	Portsmouth*	Portsmouth Town Landfill	1954	10	0	R
7	Providence	Silvestri's Sand & Gravel	1955	450	15	I
22	Richmond	Richmond Landfill Area	NA	8-10	NA	U
23	Scituate	Scituate Town Landfill	1955	30	35	A
24	Smithfield	Smithfield Town Landfill	1956	13	3-5	R & A
25	South Kingstown	a. Rose Hill Landfill	1966	NA	10	R
26	South Kingstown	b. Plains Rd. Landfill	1952	6	15	R
27	Tiverton	Tiverton Landfill	1952	150	50	A
28	Warren	Warren Landfill	1969	13	7	R
29	Warwick	Sanitas of Rhode Island	1970	50	NA	I
30	Westerly	Westerly Landfill	1934	30	12	A
31	West Greenwich	West Greenwich Landfill	1968	70	NA	NA
32	West Warwick**	West Warwick Landfill	1930	20	1	C
33	Woonsocket	a. Woon. Disposal Area	1900	35	NA	R & C
34	Woonsocket	b. Incinerator	1960	--	NA	I

[1] Information was supplied by the individual facilities. It is very likely that the method for arriving at these estimates varried from case to case.

[2] Adjacent Land Use
R - Residential
C - Commercial
I - Industrial
U - Undeveloped
A - Agricultural

[3] Newport Incinerator to cease operation

* Plan to have transfer station constructed with waste eventually disposed at a location outside of the community

** Have contract for construction of an incinerator with disposal at Silvestri's landfill.

NA - Information not available

TABLE 7

PRIVATELY OWNED AND OPERATED DISPOSAL FACILITIES IN RHODE ISLAND

Site No.	Name of Facility	Location	Year Placed in Operation	Size in Acres	Approx. Life Remaining in Years[1]	Adjacent Land Use[2]
6	Capuano Landfill	Cranston	1928	40	20	R & I
35	J. M. Mills	Cumberland	1956	85	4-10	R & I
36	Macera's Landfill	Johnston	1959	30	5	A
7	Silvestri's Sand & Gravel	Johnston	1955	450	15	I
37	Demolition Disposal Site	Johnston	1967	20	2	C
38	Dupraw's	Lincoln	1943	4	1	R & A
19	Fortune Landfill	N. Smithfield	1969	36	5-10	U
29	Sanitas of Rhode Island	Warwick	1970	50	NA	I
12	T&V Disposal Site	Foster	1969	5	1	A

NA - Information not available.

[1] Information supplied by the individual facilities. It is very likely that the method for arriving at these estimates varied from case to case.

Adjacent Land Use
R - Residential
C - Commercial
I - Industrial
U - Undeveloped
A - Agricultural

TABLE 8

ESTIMATED MUNICIPAL SOLID WASTE MANAGEMENT EXPENDITURES (FY 1972 - 73)

Town or City Name	Collection Cost	Collection Per Capita Cost[1]	Disposal Cost	Disposal Per Capita Cost[1]	Combined Cost	Combined Per Capita Cost[1]
Barrington	138,028.59	7.54	25,666.73	1.40	163,695.32	8.95
Bristol	NA	-	28,872.00	1.59	NA	-
Burrillville	NS	NC	7,348.66	.71	7,348.66	.71
Central Falls	48,204.00	2.56	44,776.00	2.38	92,980.00	4.95
Charlestown	NS	NC	10,000.00	3.13	10,000.00	3.13
Coventry	NS	NC	45,000.00	1.84	45,000.00	1.84
Cranston	NA	-	NA	-	441,000.00	5.81
Cumberland	75,000.00	2.62	10,000.00	.35	85,000.00	2.97
East Greenwich	26,400.00	2.54	40,100.00	3.86	66,500.00	6.39
East Providence	337,000.00	6.67	150,000.00	2.97	487,000.00	9.64
Exeter	NS	NC	4,385.00	1.29	4,385.00	1.29
Foster	NS	NC	NA	-	NA	-
Glocester	NS	NC	12,003.09	2.11	12,008.09	2.11
Hopkinton	NS	NC	13,172.14	2.35	13,172.14	2.35
Jamestown	NS	NC	NA	-	NA	-
Johnston	NA	-	NA	-	68,510.00	2.90
Lincoln	71,551.51	4.31	30,000.00	1.81	101,551.51	6.12
Little Compton	NS	NC	14,000.00	5.60	14,000.00	5.60
Middletown	NS	NC	48,956.00	1.62	48,956.00	1.62
Narragansett	NS	NC	14,520.00	1.91	14,520.00	1.91
Newport	246,530.00	7.08	153,000.00	4.40	399,530.00	11.48
New Shoreham	NS	NC	NA	-	NA	-
North Kingstown	NS	NC	36,460.36	1.20	36,460.36	1.20
North Providence	118,478.33	4.63	50,000.00	1.95	168,478.33	6.58
North Smithfield	23,410.00	2.41	22,000.00	2.27	45,410.00	4.68
Pawtucket	NA	-	NA	-	445,846.97	5.80
Portsmouth	NS	NC	32,000.00	2.41	32,000.00	2.41
Providence	770,359.46	4.39	487,082.42	2.73	1,248,441.88	7.12
Richmond	NS	NC	7,328.50	2.71	7,328.50	2.71
Scituate	35,000.00	4.43	5,000.00	.63	40,000.00	5.06
Smithfield	54,700.00	3.72	32,891.31	2.24	87,591.31	5.96
South Kingstown	NS	NC	42,520.00	2.43	42,520.00	2.43
Tiverton	45,500.00	3.35	51,636.00	3.80	97,136.00	7.14
Warren	29,991.35	2.75	9,703.20	.89	39,694.55	3.64
Warwick	445,489.00	5.06	50,112.00	.57	495,601.00	5.63
Westerly	NS	NC	23,360.80	1.28	23,360.80	1.28
West Greenwich	NS	NC	2,500.00	1.25	2,500.00	1.25

TABLE 8 (CONTINUED)

	Collection		Disposal		Combined	
Town or City Name	Cost	Per Capita Cost[1]	Cost	Per Capita Cost[1]	Cost	Per Capita Cost[1]
West Warwick	105,520.00	4.31	23,647.34	.97	129,167.34	5.27
Woonsocket	219,000.00	4.72	151,058.15	3.26	370,058.15	7.98
State Total		4.40[2]		2.09[2]		

Note: Population figures are preliminary projections based on the 1970 census.

1 - Estimated annual municipal per capita cost for 1973.

2 - Figures are derived by taking an average of the municipal per capita figures estimated above.

NS - No municipal collection service

NC - No municipal collection cost

NA - Information not available

cooperation in providing information regarding solid waste program expenditures. The question asked were as follows:

1. How much money, if any, was spent by your municipality in fiscal year 1972-73, on the collection of solid waste? (This figure should include transfer costs.)

2. How much was spent in fiscal year 1972-73 on the disposal of the collected wastes? (This figure should include the cost of incineration, other reduction practices, and/or landfilling.)

Estimated cost figures were requested if the exact expenditure information was not available. The response by correspondence was about 50 percent which necessitated follow-up telephone calls on or about September 19, 1973.

At the time of this writing, a response has been obtained from all but three of the communities in Rhode Island. The collection, disposal, and combined costs are listed in Table 8. Adjacent to these columns are the estimated municipal per capita costs for 1973. The responses from Cranston, Johnston, and Pawtucket stated only combined cost figures.

An analysis of the survey results shows that of the twenty-one communities with municipal collection services, sixteen responded with an estimated cost. Thirty-one of the thirty-nine communities responded with an estimated solid waste disposal cost. The result is an estimated combined cost for all but four of the communities in Rhode Island.

The following are two factors which could affect the accuracy of the estimated expenditures presented in this section:

1. The fact that some communities do not isolate their solid waste collection and disposal costs from their overall public works expenditures.

2. The fact that some communities assign a large capital cost to a specific fiscal year, while others pro-rate this expenditure over a period of years.

PART TWO:

ANALYSIS OF THE PROBLEM

*Most communities in the state are presently faced with serious solid waste management problems because of the inadequacy of the facilities which serve them. These problems will intensify as the generation of refuse increases in the future.

*The present lack of an overall statewide program for effective solid waste management constitutes the major problem in coordinating solid waste activities in Rhode Island.

*No state agency is currently involved in functional level planning for solid waste management activities, a contributing factor for both the failure of the local communities to develop their municipal long range plans and to the problem of effective regulation and overall management on the part of the state.

*If regionalization of services and disposal facilities, a desired goal, is to become a reality, the state must have more latitude in providing stronger support and leadership to the public and private sectors.

*The opportunity for an economically successful resource recovery operation in Rhode Island is real and desireable. However, in order to properly plan for such a system, a fully integrated solid waste program and a market study would be necessary.

*Although the state must take the lead in establishing and managing resource recovery activities, local communities and private citizens must also play significant roles. Certain resource recovery activities such as recycling of newsprint can best be accomplished on the local level.

PART TWO: ANALYSIS OF THE PROBLEM

If the solid waste problems of Rhode Island are to be effectively managed, this must be accomplished within the framework of an overall statewide program which successfully integrates all elements of the problem including generation, storage collection, transfer, separation, processing and eventual disposal of wastes, and which provides for the necessary planning, management, and regulatory functions that must be performed. The program must also provide for coordination of the required state, local and private sector activities as well as for coordination of solid waste activities with related elements of the State Guide Plan.

The present lack of this overall structural framework constitutes the major solid waste problem as it exists today. The other problems and major issues discussed below are the key elements of this central problem.

A. Problems with the Administration of Solid Waste Programs

An examination of the structure for conduct of the state and municipal solid waste program activities reveals that the planning, regulatory, and management activities required for effective administration of solid waste programs on both the state and local level are not being effectively performed. In terms of the state program, not all of the functions are effectively provided for through legislative authority.

1. The Planning Function

a) State Level

There are two levels of planning that have to be considered here. Framework level planning, which is concerned with the establishment of broad development forms, usually referred to as guide plans, is performed in Rhode Island by the Statewide Planning Program. That agency has been authorized, through Executive Order Number 10, (June 22, 1969), to prepare and continually revise a long range State Guide Plan, embodying and incorporating several key elements, including solid waste management. In this capacity, the Statewide Planning Program participated in the formulation of the 1968 framework level plan report on solid waste, and it will continue its involvement on this level.

Functional level planning, also referred to as reconaissance or feasibility level planning, involves the actual detailed surveying and examination of features associated with a specific element of the overall framework level guide plan, such as solid waste, for the purpose of determining the optimum alternatives to be advocated for specific project implementation. At the present time there is no state agency which performs this functional level planning for solid waste management.

Under section 23-46-1 of the General Laws of 1956, as amended, the state Department of Health is required to develop and maintain, in close concert with plans and policies of local governments and other state plans, a statewide plan and policy for refuse disposal.

The Health Department first became involved in Solid Waste Planning in February, 1967, and two months later, Governor Chafee formed a Refuse Disposal Task Force for essentially the same purpose. This Task Force subsequently produced a report in February, 1968, which, for all practical purposes, was a solid waste disposal framework level plan for the state. However, it was never accepted by the Department of Health, Education and Welfare, which at that time, administered federal solid waste management programs, as the plan required from the Rhode Island Department of Health.

The Rhode Island Department of Health, therefore, found itself in somewhat of a quandry because it had a report, plan, and enabling legislation which it had to administer while at the same time it was being urged by a federal agency, to produce another plan. Obviously, another plan could not be produced until ample time had been allowed to determine whether the existing plan was feasible.

To further complicate the issue, the planning function for solid waste disposal was transferred by legislation to the Public Utilities Commission in 1971 and it was not returned to the Department of Health until late 1972.

For these reasons, the functional planning process has never been fully undertaken, and, hence, there is no planning effort currently being performed, that can provide the specific direction required for the development of an integrated statewide solid waste management system.

b) Local Level

Under section 23-46-1 of the General Laws of 1956, as amended, each municipality in the state is also required to prepare a long range refuse disposal plan and program including the location, design concept, and estimated cost of facilities to be provided. It is further required that these plans be consistent with comprehensive state and local plans for area development. This requirement has never been rigidly enforced and no municipality has, as yet, prepared a complete and detailed long range plan. It should be noted, however, that the state does not provide financial assistance to local communities to help them in developing their plans, since state grant-in-aid monies cannot be used for this purpose.

2. The Regulatory Function

The regulatory function over solid waste management facilities is assigned to the Division of Solid Waste Management of the Department of Health by Section 23-1-18 and 23-46-1 of the General Laws of 1956, as amended. In compliance with these sections, the Department has published rules and regulations establishing minimum standards for permissible types of refuse processing and disposal facilities and for the design, operation and management of these facilities.

The Division performs regulatory activities primarily from a public health and environmental quality orientation. It is also concerned with the manner in which the day to day disposal activities are conducted so that unsatisfactory conditions do not develop. On a number of occasions, the Division has used its influence to prevent the establishment of refuse disposal facilities which it deemed were not in the best interests of the local communities or of the state.

The most difficult problem faced by the Department in the conduct of its regulatory function is caused by the fact that in most instances, alternative courses of action are not available to a community. If the municipality's solid waste facility is shut down because it fails to meet the established standards, there must be another option available to that community. In many instances, these other options are not immediately available. It must therefore be concluded that rigid enforcement of established regulations must await development of a comprehensive statewide functional level plan which will provide for establishment of the required alternative facilities and options. Another problem is that the Department is often faced with difficulties in obtaining evidence for prosecution of violators because of the time and expense involved.

The municipalities of the state regulate the collection and disposal of refuse within their boundaries. They have the ultimate authority over location of the disposal areas and facilities within their boundaries, as well as control over who will use them and the type of wastes that can be accepted at these sites. It is this local control over the location and use of disposal sites that complicates the task of finding new sites and establishing regional disposal sites. Several communities in the state have passed ordinances prohibiting the disposal of refuse from other communities within their borders. Most of the regionalization that has occurred to date has been the result of the activities of private industry.

3. The Management and/or Operational Function

At the present time no state agency is empowered to issue licenses for the operation of solid waste disposal facilities, or to establish and, if need be, to operate disposal systems and facilities. Management and operation of systems and facilities is currently, as provided by law a function of local government, and it is their prerogative to establish and operate systems and facilities or to contract with private firms to do so.

4. Summary

In summary, it is observed that certain gaps exist in the existing state structure for the conduct of solid waste management activities. These inadequacies in the structure can be summarized as follows:

Planning -	No state agency is currently involved in functinnal level planning activities. This is a contributing factor in the failure of the local communities to develop their own municipal long range plans.
Regulation-	The lack of a long range statewide solid waste plan has also contributed to the problem of effective regulation on the part of the state. The regulatory activities of the municipalities, in terms of the control they exert over the location and use of processing and/or disposal facilities, has served to complicate the problem of developing new disposal sites and of developing systems and facilities.
Management and/or Operation-	The management and/or operation of solid waste systems and facilities has up to now been regarded entirely a function of local government. Under this concept it is their prerogative to establish and operate systems and facilities or to contract with private firms to do so.

B. Problems With Processing and/or Disposal Facilities

1. Providence

In May, 1973, the City of Providence signed a contract to have their municipal wastes shredded and disposed of, and simultaneously phased out the operation of the municipal incinerator. The operation of the shredder lasted only until August, 1973, when it was damaged by fire and put out of commission. Since that time the city has contracted with private firms to haul the municipal wastes to a disposal site ouside the city.

Providence is also faced with the problem of not having a suitable disposal site within its borders to accommodate either the shredded residential wastes or the commercial, industrial, and demolition debris and other wastes produced within the city.

The city has stated that it foresees the need to engage a consulting firm to make an in-depth overall study of its solid waste problem, but it has recently indicated that it might postpone this until such time as the state's plan has been completed.

2. Pawtucket

The City of Pawtucket has the most efficient incinerator in the state. Yet it does not meet current state air quality emission standards. To install the required air pollution devices to meet the new standards would require an expenditure that would virtually equal the cost of constructing the incinerator originally ($1.4 million). The deadline for meeting the EPA requirements has been set for May 31, 1975 and the city has contracted with a local consulting firm to develop engineering plans for the required improvements. It is expected that bids for the installation of the required equipment will go out in the near future since the voters of Pawtucket have recently approved a bond issue for upgrading the incinerator. In addition, the city if reported to be exploring the possibility of installing a shredder to be used in conjunction with the incinerator.

The city is not faced with an immediate problem with its landfill operation in terms of the useable life remaining at the site, but the capacity of the landfill site would preclude the possibility of abandoning the incinerator and reverting to a straight landfill operation.

3. Woonsocket

Woonsocket's incinerator which was built in 1960, and for which 6 years still remain on the payment of the bond amortization schedule, does not meet the current air emission standards and has been given until May 31, 1975, to comply. The city is now exploring the possibility of bringing the present incinerator up to the required standards or building a new facility, not necessarily an incinerator. If the decision is made to construct a new incinerator, the city has stated that it will attempt to create a regional organization by inviting the surrounding communities to join with them.

Woonsocket is also faced with a problem involving its landfill operation. The present site, because it is confined by the presence of the Providence-Worcester railroad track, and is in close proximity to the Blackstone River and its flood plain, cannot be developed much further than it is at the present time.

4. Newport

The Newport incinerator also is not in compliance with Rhode Island air pollution control regulation. Unlike Pawtucket and Woonsocket, however, the City of Newport has decided to abandon its incinerator as of December 22, 1973. A contract has already been signed with a private contractor to dispose of the city's wastes, effective December 22, 1973.

5. Other Communities

Most of the remaining communities in the state which rely solely on land disposal methods are also faced with serious problems. Of the 40 disposal sites now used by these cities and towns, few are large enough or have sufficient cover material available to be considered part of any long term solution and some cannot even be counted on for a short term basis. There are still others that have substantial environmental problems caused principally by either presence of a high groundwater table or proximity to surface bodies of water.

The result is that only a very few of these communities can realisticly consider their present landfill adequate for any length of time. Some, like Coventry, Middletown, Portsmouth and West Warwick, have extremely limited life left in their facilities and are anxiously exploring new methods or seeking new areas.

At the time of this writing, two communities, Little Compton and West Warwick, have begun construction on municipal incinerators.

C. Problems of Regionalization

The City of Central Falls utilizes the Pawtucket incinerator. The residents of South Kingstown and Narragansett make use of the two landfill sites in South Kingstown. Other than these two instances, the only regionalization of disposal facilities that has occurred has been brought about under the auspicies of private industry. The Silvestri landfill in Johnston serves as the disposal facility which takes the mixed residential wastes of Johnston, Lincoln, Providence and a portion of Cranston. Three landfill sites serve as regional disposal sites for the non-residential wastes of the state.

The fact that there are forty landfill sites in a state as small as Rhode Island, serves to prove that the regionalization of disposal facilities has failed to develop to any great degree. There are numerous factors that contribute to the present lack of regional disposal facilities. The fact that municipalities have authority to regulate both the location and use of these facilities has made the development of private landfills difficult, and has often resulted in the passage of local ordinances prohibiting importation of wastes from surrounding communities. It is also true that not all the communities in the state face similar problems regarding solid waste. Those communities that are heavily built up and are the largest produces of solid waste are the same communities that have the most serious problem of finding suitable disposal areas within their boundaries. They must look to the less developed communities for landfill sites, but the latter do not necessarily share the same problem or feel compelled by pressure from their residents to enter into regional agreements. This does not preclude the possibility at this time of such agreements being made, or of densely developed communities joining together in the operation of a shredder or incinerator. But these types of development will have to receive greater impetus from the state than is now the case.

The state grant-in-aid program does attempt to encourage regionalization, but the small inducements involved are insufficient as demonstrated by the present lack of regional facilities. It is doubtful however, that monetary inducements, within reasonable limits, will in themselves be adequate. Under section 23-46-2 of the General Laws of 1956, as amended, the Department of Health is authorized to recommend to the Governor that regional districts be created by the General Assembly, if it appears there is a justifiable need to do so. The districts may be created by requiring groups of communities to join together in a cooperative effort, by establishing a regional solid waste agency with the necessary planning, acquisition, construction, operation, and financing powers, or by other suitable means.

Regional services and facilities now provided by the private sector play a vital role in the overall solid waste management activities of the state, but because of restraints many communities have placed on the development of privately owned disposal facilities, it is very doubtful that the private sector can accomplish effective statewide regionalization without stronger support and leadership from the state. Research to date indicates that several such regional solid waste management facilities are required to serve the whole state.

In summary, the regionalization of services and disposal facilities is a desired goal for several reasons:

a) Many communities do not have suitable disposal sites within their own boundaries.

b) Incinerators, shredders and other waste reduction or resource recovery facilities may significantly increase the cost of waste disposal, yet the installation of these facilities is fast becomming a necessity to urban communities. Regionalization of these facilities could help reduce the costs to the communities making use of them.

c) Regional disposal and processing facilities are necessary before resource recovery operations can become feasible on a significant scale.

The state must have more latitude and must play a stronger role if regionalization is to become a reality on a large scale.

D. The Resource Recovery Problem and Opportunities

The fact that there is material of value in the present solid waste stream is undeniably true. Commercial and industrial wastes have traditionally been recovered and these serve as the basic raw material of the secondary materials industry. But the reuseable energy and material resources contained in the residential waste stream are virtually untapped.

The technology for recovering valuables from this waste stream is presently being demonstrated. When considering the fact that the world's energy resources and the supply of many raw materials constitute a present world-wide source of concern, the market demand for many of these reuseable materials must also be conceded. The problems that remain to be solved, however, are those of accessibility to these markets, organization of the recovery system, and perhaps the most serious of all, the costs involved. These problems comprise the basis of the issues involved in the efforts of any state to develop a resource recovery program. All three are closely related and should be dealt with in a fully integrated manner.

Accessibility to markets will vary from state to state. This will be the determining factor in the decision as to what resources will be recovered and what the emphasis of the state's program should be. The state of Connecticut has determined that they have potential access to markets for virtually all of the wastes that can be recovered. A market study for the state of Vermont has indicated that recovered paper, glass, and cans can be marketed, but not the energy resources. The determination of what can be feasibly marketed must be made on the basis of a specific market area study which will take into account the material contained in the waste stream as well as the economics involved.

The organization of the resource recovery program will be largely influenced by the result of the market study in terms of how the recovery of those materials that are to be marketed will be organized. The organization must attempt to broaden the waste stream as much as possible so as to recover as many as possible of the marketable resources. It must also integrate completely all the elements of the solid waste program including the planning, administration, and if need be, the financing of the collection, separation, transportation, processing, and ultimate disposal of all the wastes generated, if maximum success is to be achieved.

The cost of the resource recovery program is the most difficult problem to solve. It is directly related to the problems of accessibility to markets and of organization. A critical aspect of this particular problem is the initial costs involved for the required capital investments in the hardware. The management and administrative costs to the taxpayers of the resource recovery program can be minimized through reliance on private industry for the operation of the required facilities. The problem of the large initial capital investment in hardware is compounded by the fact that the return on this investment will be minimal for at least the initial stage of the program's development. Piecemeal resource recovery could reduce these initial costs, however. Separation at the consumer level could also reduce these costs, but this could result in higher collection costs.

Despite these problems, the prospects for effective resource recovery and recyling of a large percentage of the material contained in the state's waste stream have increased significantly because of the many opportunities and benefits involved. First, resource recovery presents the opportunity to reduce the amount of material that has to be ultimately disposed of in the ground, thereby reducing the amount of land that has to be used for this purpose. Second, the opportunity for successfully marketing materials that have been recovered, has never been better. The prices currently offered for recovered paper, glass, metals, and other materials are at an all-time high, and based on testimony received from various secondary material dealers in the state they are expected to continue to rise as virgin materials become scarcer. Third, the prospects for recovering the energy resources contained in the waste stream also appear to be quite favorable in view of the current energy crisis. Fourth, from a conservation point of view, the effect of recovery and reuse of discarded material could substantially reduce the amount of virgin resources that have to be exploited, thus helping to preserve these resources for future generations.

In summary, there are many problems associated with developing a resource recovery operation, but there are many benefits and opportunities which justify moving swiftly in this direction. The state must take the lead in developing the resource recovery program. To do this, it must sudy the state's accessibility to potential markets for recovered materials. It must also fully integrate the resource recovery programs with every aspect of overall solid waste management activities.

The present resource recovery activities in the state which result from the efforts of environmentally conscious private citizens, with the help of private industry and many municipalities, certainly have beneficial aspects and speak well for the civic mindedness of all the individuals involved. But these efforts fall short of meeting the requirements for a truly effective resource recovery program. In addition to the strong role that must be played by the state in establishing the markets and setting up the program, the communities must also participate as well as the private citizens. There are certain activities, that could be handled on the municipal level, such as the recovery of newsprint from the waste stream, which would result in a substantial reduction of the amount of wastes to be disposed of, as well as providing a source of increasing revenues to the communities. This type of an activity would require the participation of the citizenry since a basic type of source separation at the household level would have to be put into affect to make this type of program work.

E. Financing Problems

Most communities in Rhode Island finance their solid waste management programs through general tax revenues. Those communities which have constructed incinerators, in addition to one community which has purchased land for landfill, have borrowed money, through the issuance of general obligation bonds.

The state grant-in-aid program, which was established in July of 1968, does provide limited financial assistance to the local communities for the purpose of defraying some of their expenses involved in the design, construction, maintenance and operation of refuse disposal facilities. The basic grant is twenty-five cents per capita, andthis is increased by an additional fifteen cents when a community becomes a part of a regional arrangement. To be eligible for these funds a community must first demonstrate that its solid waste program meets the state program requirements. The community must also, as a minimum, equally match the amount of monies received from the state through this program.

When the state grant-in-aid program was conceived, the intention was to provide the Department of Health with a useful tool which would facilitate its regulatory functions, and at the same time, provide a measure of financial support to communities in developing their programs and facilities. To this end, the program has been moderately successful. It was not envisioned, however, that the program would play a significant role in assisting communities to construct incinerators or other costly waste reduction or disposal facilities. At the present time, Providence, which is eligible for the largest possible annual grant through the formula on which the grant-in-aid program is based, could receive only $54,000 as a basic grant, and an additional regional incentive of approximately $32,500. This sum would hardly constitute a significant contribution toward the construction of a multimillion dollar incinerator by that city.

Another problem with the grant-in-aid program is that the present formula limits the amount of possible grant money to smaller communities to a level which is not considered to be adequate for the intended purposes. It has been suggested in the past that a minimum grant of $5,000 should be authorized. This suggestion seems to have a great deal of merit.

At the present time, no federal program funds are available to local communities for construction or operation of disposal facilities or to assist them in the management and operation of their programs. A limited amount of federal funds is made available to the states for planning and regulatory activities.

In summary, only a limited amount of state and federal funds are available to local communities for construction of required facilities or for the operation of solid waste systems and programs. This is in marked contrast to other environmental program areas such as water pollution control.

F. Short Term Problem Considerations

As previously stated, the development of an overall state program for conducting required solid waste management activities must be viewed as the ultimate objective. But, full development of this program must be based, in part, on the findings, conclusions and recommendations of a comprehensive, functional level plan which includes resource recovery and regionalization considerations. The conduct of such studies, based on experiences in other states, would require at least a year. Implementation of the recommended program, including the preparation and passage of required legislation, and establishment of necessary administrative and financing arrangements would consume considerably more time. For this reason, it is concluded, therefore, that there is a need for some interim actinn capability on the part of the state, to meet the most urgent problems and to respond to requests of municipalities for help in solving their immediate disposal problems.

Two basic types of activities are seen as being required if the state is to have the capability to assist local communities in solving their immediate problems. First, the state must have the capability to act as a broker between municipalities, and between municipalities and private firms and in this fashion use its good offices to bring about suitable arrangements. Second, the state must have the capability to launch an immediate program to provide solid waste management facilities to those communities who are in need of new facilities.

PART THREE.

THE RECOMMENDED OVERALL PROGRAM

*The state's solid waste management program must provide for:

1. The mechanism for planning regulation and management;
2. The promulgation of a functional level solid waste management plan for development of an integrated system of solid waste facilities throughout the state;
3. Appropriate response to urgent solid waste problems of local communities;
4. A continued regulatory and enforcement effort; and,
5. Training, education, research and promotional programs.

*The regulatory and enforcement activities should remain with the Department of Health.

*It is recommended that a state solid waste management corporation be created to:

1. Conduct the planning required to develop an integrated statewide system of solid waste management facilities;
2. Manage and guide the development of component parts of the system in accordance with the dictates of this plan;
3. Establish and manage a resource recovery program, and;
4. Provide required assistance to local communities in the interim period.

*The corporation must have all the necessary powers including those required to:

1. Select and acquire sites for facilities;
2. Construct and operate facilities;
3. Establish charges for use of its facilities and services; and,
4. Establish and conduct a statewide resource recovery operation.

*The estimated cost of funding activities of the corporation for the first three years of its operation are estimated at $1,700,000.

This amount should be provided by the state in the form of a loan. Large capital expenditures should be funded through issuance of revenue bonds.

"Municipal participation in the state's system should be on a voluntary basis:

1. Communities that can solve their own disposal problems in an acceptable manner within their own boundaries would be free to do so;
2. Those that cannot solve their problems in this manner would be assisted by the corporation; and,
3. The corporation on its part would be obligated to provide appropriate assistance.

PART THREE: THE RECOMMENDED OVERALL PROGRAM

A. Essential Program Requirements

In order to establish a state program to meet the goals and objectives discussed in the Introduction, a five phased program is required.

First, the mechanism for conducting required planning, regulation, and management functions must be created. This is the essential first step because the other phases of the program must all be based on and must result from actions to be taken through this mechanism. The composition and construction of this mechanism is discussed in detail in the following section.

Second, a long range functional level plan for development of an integrated statewide system of acceptable transfer stations, processing facilities, resource recovery facilities, and ultimate disposal facilities must be developed. This plan will have to spell out the number of facilities that will be required, the location of these facilities, and their approximate capacity and cost. It will also have to indicate how the new component facilities will be phased into the overall system. In conjunction with this plan, a market study for determining the scope and emphasis of the state's resource recovery operation, must be conducted. This market study should be launched at the same time as the comprehensive long range plan.

Third, a program for providing immediate assistance to local communities in solving their critical disposal problems must be developed.

Fourth, the state's program must be supported by a vigorous regulatory and enforcement effort within the State Department of Health.

Fifth, the state's program must provide for required training, education, research, and promotion programs that will:

a) Assure that facility managers and operators are sufficiently skilled;

b) Make the citizenry more aware of solid waste problems, and more receptive to the need for comprehensive solutions;

c) Assure that decisions concerning technology are made on the basis of the most current useful information, and;

d) Assure that the efforts and intentions of the state in developing its programs, are adequately and favorably publicized.

B. The Required Mechanism

The mechanism needed to carry out the required program must provide for basic regulatory, planning, and management functions.

1. Regulatory Functions

It has been determined that the regulatory and enforcement activities of the state are adequately provided for within the jurisdiction of the state Department of Health, and should remain there. There is a need, however, to expand the scope of these activities in view of the more significant role that regulatory and enforcement activities will have to play. Authority for the control of ground water pollution must be re-examined on the basis of solid waste disposal regulation needs. All solid waste disposal facilities within the state should be licensed by the Health Department for an indefinite period of time or, in instances where a facility is not in compliance with department regulations, for an interim period accompanied by a strict compliance schedule.

To facilitate this regulatory and enforcement activity, the following recommendations for strengthening the program are made:

a) Establish a permit or licensing program for the location, design, construction and operation of landfills and other disposal or processing facilities, including those dealing with industrial, commercial, demolition, hazardous, and municipal wastes.

b) Participate in the operation of a training program to assure that managers and operators of solid waste management facilities are properly trained and kept abreast of new management technique.

c) The state grant-in-aid program should remain with the Department of Health, as it is foreseen that it will continue to play a significant role in regard to municipal programs for, at least, the short-range future.

d) The facilities that will be developed as part of the proposed state system must be subject to the regulatory and enforcement activities of the state Department of Health.

e) In view of this expanded regulatory and enforcement function, it is recommended that the staff of the Division of Solid Waste Management be appropriately increased.

2. Planning and Management Functions

Both the planning function, which will establish the basis for development of the proposed state system of transfer stations, processing facilities, resource recovery facilities, and ultimate disposal facilities, and the management function which will serve to guide and direct the development of various system components to ends dictated by the plan, are not now adequately provided for within the existing state structure. Both functions must be the responsibility of a single agency, and that agency must be created as an essential first step in the state's program.

A number of alternative approaches to the creation of this planning and management vehicle were examined and evaluated. The major criteria for evaluating these alternatives included:

a) The degree of required state control.

b) The degree of flexibility needed for carrying out the programs.

c) The ability to hire highly qualified personnel.

d) The ease of implementation.

e) The ability to operate as a body politic capable of issuing revenue bonds and establishing user charges for services rendered.

ON THE BASIS OF THESE AND OTHER CRITERIA, IT WAS DETERMINED THAT THE REQUIRED PLANNING AND MANAGEMENT ACTIVITIES COULD MOST APPROPRIATELY BE PROVIDED FOR BY CREATING A STATE SOLID WASTE MANAGEMENT CORPORATION.

The basic charges to this corporation should be to:

a) Undertake the planning required to develop a statewide system, as well as, a market study for resource recovery.

b) Manage and guide development of the component parts of the system in accordance with dictates of the plan.

c) Establish and manage a state resource recovery program.

d) Provide required assistance to local communities in the interim period.

In addition, the corporation should carry out the required education, research, and promotion activities.

C. Functions and Duties

In creating the state solid waste management corporation, the following functions and duties should be set:

- **Ability to Acquire Sites**

  The corporation must have the authority to select and acquire sites for construction of required transfer stations, processing facilities, resource recovery facilities, and ultimate disposal facilities, through purchase or by condemnation if necessary. It should also have the authority to lease sites when and where appropriate.

- **Ability to Construct and Operate Facilities**

  The corporation must have this capability but it should only be used as a last resort. Private industry should be encouraged, to the greatest degree possible, to construct and operate these facilities for the corporation, on state owned or leased sites.

- **Ability to Establish and Collect User Charges**

  The authority must be able to contract with municipalities and private firms for use of its facilities. The rates charged to municipalities or private firms, for disposal in corporation owned facilities and for services rendered, should be sufficient to assure that the corporation will function at a break even point financially. Also these rates should be standardized, throughout the state to the greatest degree possible.

- **Resource Recovery Activities**

  The corporation must be required to undertake a detailed study of the potential marketability of material and energy resources contained in the state's waste stream, and to launch a statewide resource recovery operation in accordance with the results of the study. The corporation should also, in conjunction with the Department of Health, encourage and support development of municipal resource recovery efforts based on recovery of those materials, such as newsprint, that can be readily separated at the household level. In addition, the corporation should conduct research into the feasibility of extensive source separation at the household level, the feasibility of source reduction programs, and the development of programs to foster and encourage use of recycled materials. In this respect, particular emphasis must be given to the burning of combustibles recovered from the waste stream, in power plants and industrial plants, as a supplement to fossil fuels.

- **Planning Review**

  The corporation must be required to revise its functional level plan periodically and to submit these plans to the State Planning Council for their review and approval. The State Planning Council is comprised of 10 state agency heads, 5 municipal chief executives, and representatives from 3 federal agencies. Review and approval by the State Planning Council will assure that the corporation's plans are effectively coordinated with the plans of other agencies in related areas and with the State Guide Plan. It will also provide effective control by the administration over the corporation's activities.

- **Citizen Participation**

  It is further recommended that a citizen advisory board, comprised of private citizens selected from throughout the state, be created for the purpose of advising the corporation in matters of policy, particularly in regard to resource recovery and recycling activities, and to make appropriate reports to the Governor.

D. The Interim Program

To assist local communities in solving their disposal problems in the interim period before the plan can be developed and implemented, the solid waste management corporation will have to function in one of two ways. First, it could operate essentially as a broker, and in this capacity, arrange to bring two or more communities together in a mutually beneficial arrangement, or to locate a private disposal firm for a community to contract with. This approach should be tried first since it would not involve much expense on the part of the state and would not require committing the corporation to the establishment of a new facility before the overall plan is developed.

Second, in the event that a municipality's urgent problems cannot be solved in this manner, the corporation would have to provide a new facility, even though the statewide functional level plan for location of future component facilities has not been completed. This would of course, necessitate that such facilities be designed with maximum flexibility so that they may readily be integrated into the statewide system as it develops.

E. Additional Considerations

The following additional considerations have to be taken into consideration in developing the state's program:

1. Restitution to Communities in Which Future State Facilities are to be Located

The activities of the proposed solid waste management corporation in providing for the transfer station, processing, resource recovery and ultimate disposal facilities in accordance with the plan that is to be developed, are expected to result in a negative reaction in at least some of the communities in which the future facilities will be located. This is unavoidable. Positive action should be taken by the corporation, however, to deal with the situation and to head off some of the potential opposition by bringing the local communities into the decision making process as to where specific facilities should be located. This could be accomplished by the joint selection of a number of specific alternative sites as specified in the plan which will point out general areas for the location of facilities based on economic and system development criteria. The municipality concerned, and its citizenry, could then determine the specific site that is the most acceptable to them within the general area prescribed in the plan.

The corporation should also assure that facilities constructed at the selected sites, will be properly developed, managed, and regulated, so that no damage is done to the physical environment or visual landscape. Also, the criteria used in finding acceptable sites should include the provision to, wherever possible, locate future facilities on land already used for a solid waste disposal purpose.

Some steps can also be taken to prevent additional expense to the communities in which such facilities are to be located. This could best be accomplished by requiring the corporation to make payments to such communities, to cover the cost of any municipal services required to a result of the activity generated.

2. Financing

The financing program to support a statewide solid waste management program must include:

a) The necessary funding to launch the program;

b) The mechanism to provide revenues sufficient to cover the cost of general administrative and management expenses, and to build sufficient reserves to support small capital expenditures; and,

c) The mechanism to finance construction of large and expensive capital facilities.

The initial funding required to launch the corporation's program should be sufficient to provide for administrative costs including employment of a staff as well as costs of employing consultants and other specialists on a contractural basis. It should also provide for the financing of those projects which may be required at the very outset of the program in order to provide assistance to those communities that are faced with serious problems. Lastly, this start-up funding should also provide for interest payments on the money it intends to borrow in the short-range future, until these initial projects can begin producing revenues.

The initial funding requirements should be provided by the state in the form of an interest free loan that will be repaid once the corporation has started receiving revenues through the charges it will levy for the use of its facilities and services. Within three years the corporation should have developed its system to the point where substantial revenues start coming in, and it is capable of meeting all of its program costs. Within five years it should have progressed to the point where it can start repaying the loan from the state. It is suggested that repayment to the state should be accomplished in ten equal annual payments starting in the sixth year of its operation.

The total amount of money that would have to be advanced to the corporation by the state is estimated at $1,700,000 over a three year period. For accounting purposes this sum should be distributed as follows:

Suggested Advance (In thousands of dollars)

Fund	Expense Covered	First Year	Second Year	Third Year	Total Advance
1.	Program Costs				
	Staff and Overhead	$100	$120	$140	$360
	Consultants	150	--	--	150
2.	Project Costs				
	Projects (not bonded)	500	--	--	500
	Engineering and Legal Services	50	50	50	150
3.	Interest Costs				
	Interest on Bonds	--	150	350	500
	Total	$800	$320	$540	$1660

Program costs include all of the administrative expenses as well as the expense of hiring consultants to develop required studies. Project costs will cover the financing of such facilities transfer stations, waste processing facilities, resource recovery facilities, and disposal facilities as may be required early in the program. Once the system has progressed sufficiently it will be possible to finance most of its projects through the issuance of revenue bonds.

The mechanism to provide sufficient revenues to make the corporation financially self sufficient can best be accomplished through the establishment of appropriate user charges to municipalities and private firms that contract for use of its facilities and services. These user charges will be established by the corporation at levels necessary to meet the expenses involved. The revenues raised through the sale of energy and material recovered through the resource recovery operation will also contribute to the financial solvency of the corporation. Given the steadily rising demand for recovered resources and the steadily increasing scarcity of virgin resources, future prospects for acquiring additional revenue in this manner are very good.

The corporation should finance its capital expenditures through the issuance of revenue bonds, except for those projects which will be launched at the very outset, as discussed above. The major advantage of revenue bonds is that the credit of the state is not pledged and voter approval is not required. This is considered to be a substantial advantage since recent history amply demonstrates that voter approval of public works projects including those required for environmental quality protection, is by no means, guaranteed.

The corporation should also be empowered to borrow money from commercial banks and from other sources from time to time and, as required, and to develop the mechanism whereby the joint financing of projects by the corporation and by private firms can be arranged, providing that such financing arrangements are consistent with the goal of minimizing the cost of solid waste disposal to the people of Rhode Island.

3. Participation in the State System

The overriding objective of the state in developing the statewide system of solid waste management facilities will be to eventually serve as large a portion of the state as is economically feasible. This would assure that the state system can be effectively planned for, developed, and integrated, that the state will be in a position to exert strong control over the processing and disposal of solid waste; that the resource recovery operations will be based on as broad a waste stream as possible; and, that the opportunity to take advantage of the economics of scale will be maximized.

There are two basic alternative approaches that the state could take to bring the municipalities into the system. Both approaches are contingent on the fact that existing processing and disposal facilities that fail to meet minimun standards will have to be improved or replaced by new facilities.

The first alternative approach would be to make it mandatory that the municipalities become a part of the state system within a given period of time. The time period would vary from community to community and would take into consideration such factors as the acceptability of existing municipal facilities, the remaining life span of these facilities, the expiration dates of existing contracts, and the sequence in which the new facilities, that are to be provided by the corporation, are put on line and become operational. The major advantage of this approach is that it would guarantee that the state's system will be developed according to plan, and it would assure that after a given period of time all the municipalities that could feasibly become a part of this system, will have joined. The major disadvantage is that some municipalities are likely to object to this approach, and these objections could lead to the defeat of the entire program.

The second alternative would be to make it optional on the part of municipalities, whether they become part of the state system as it develops, or whether they continue to operate their own municipal facilities. Municipal support of this approach would be virtually assured, but it would create some problems for the corporation in terms of planning for and developing a fully integrated system, and in terms of operating a resource recovery operation, since municipal participation will not be guaranteed.

It would seem, however, that the assurance of public support, which would result from the second alternative approach, would outweigh the disadvantages that are associated with it. These advantages could be overcome by assuring that the state system, which will be developed by the corporation, will offer an economically attractive alternative to the communities in the state, and most of them will eventually find it to their advantage to join the system as it develops.

On this basis, therefore, it is recommended that municipal participation in the proposed state system be on a voluntary basis providing, however, that those municipalities that decide to remain outside the system can solve their solid waste problems within their own boundaries, in a manner consistent with state regulations. There is ample evidence to suggest that several municipalities will desire to become part of the state system at the outset, and it should be the responsibility of the corporation to develop a system around these municipalities that will successfully compete with the other facilities in the state.

In summary, it is recommended that:

a) Municipal participation in the state system will be on a voluntary basis.

b) Any municipality may continue to operate its own solid waste processing, resource recovery, and disposal facilities providing such facilities are acceptable to the Department of Health.

c) If a municipality finds that it cannot solve its solid waste problems, within its own borders and in a manner that is acceptable to the Department of Health, it would have to depend on the corporation for assistance.

d) The corporation would be obligated to provide suitable and reasonable assistance to the communities on this basis.

PART FOUR:

IMPLEMENTATION SCHEDULE

*Phase one of the plan calls for passage of enabling legislation creating the corporation and expanding the duties of the Department of Health, the appointment of the members of the corporation, the creation of a citizen's advisory committee, and the establishment of the initial funding program. All of these activities should be completed by April 1, 1974.

*Phase two calls for launching the functional level planning process, establishing the interim program for assisting communities with urgent problems, and undertaking a resource recovery market study.

*Phase three will be concerned with the actual commencement of the full program including acquisition of sites, construction of facilities and launching the resource recovery program.

*The last phase of the plan provides for those activities which must be provided for on a continuing basis.

PART FOUR

IMPLEMENTATION SCHEDULE

To carry out the overall recommended program that was discussed in the preceding section, a four phased plan for the execution of required activities is recommended.

The first phase will be concerned with establishing the mechanism which will be the basis for the state's future solid waste management activities. The required activities in this phase should be completed by July 1, 1974.

1. Passing of enabling legislation by the General Assembly. This should be accomplished as early as possible in the January, 1974 session.
2. Appointment of the Solid Waste Management Corporation board of directors, the hiring of a managing director, and the recruiting of a staff. This should be largely accomplished within two months after passage of the legislation, hopefully by June 1, 1974.
3. Creation of the Citizen Advisory Committee. This should also be accomplished by June 1, 1974.
4. Establishment of the initial funding program that will be needed to cover the administrative expenses of the corporation until it can achieve final self sufficiency and to cover the cost of the planning required to spell out the state's complete comprehensive program. This funding should be provided in the form of a loan from the state to the corporation and the monies should be appropriated at the time the enabling legislation is passed.
5. Intensification of the Department of Health's regulatory and enforcement activities including the implementation of a solid waste facility licensing program.

The second phase will be concerned with the establishment of the immediate action program. Required activities in this phase should include:

1. Launching the interim program that will provide assistance to local communities in solving their solid waste management problems. This will be carried out by the corporation. These activities should commence at the outset of the program and will be expected to continue until the comprehensive plan has been fully implemented.

2. Launching the functional planning study specifying the number, location, type and size of transfer stations, processing facilities, resource recovery facilities and ultimate disposal facilities required for the development of an integrated statewide resource recovery operation. This plan must also establish the specific program that will be followed in establishing the priority for constructing component facilities for serving the various sub-regions of the state. This planning effort must also be launched as soon as possible after the corporation commences its activities. It is expected that this planning will be performed by the corporation's staff with assistance of private consultants.

3. Undertaking a market study which will indicate the potential scope and direction for the resource recovery program by determining the present and future marketability of the energy and material resources contained in the state's solid waste stream. This should be accomplished concurrently with the development of the comprehensive plan and should be performed by the staff of the corporation with the assistance of private consultants.

Phase three will actually represent the beginning of the state's full solid waste management program effort. The required activities in this phase are:

1. Completion of the functional plan and market study. This should be accomplished by December, 1974.

2. Acceptance of the plan by the State Planning Council. This should be completed by February, 1975.

3. Passage of additional enabling legislation if required. This should be accomplished by April, 1975.

4. Arrange the required financing to purchase the sites and to start constructing the facilities called for in the plan. This should be completed by June, 1975.

5. Commencement of the program forpurchasing sites and constructing facilities. The purchasing of sites will be accomplished by the corporation. Construction of the required facilities should be accomplished by private industry on the basis of contracts awarded through a bid program. These activities should be accomplished as soon as possible after June, 1975. The facilities will be provided as called for in the implementation

schedule of the comprehensive plan which will phase in new state facilities as existing facilities are phased out.

6. Launching the resource recovery operation. The recovery of energy and material resources, and signing of contracts for the sale of these resources will be accomplished in conjunction with item 5 above.

The fourth phase of the overall program will be concerned with the provision of those activities which must be provided for on a continuing basis. These activities must all be launched at the outset of the program and carried on indefinitely.

1. Conducting required research into technological and management systems.
2. Participating in the development of training programs for facility managers and operators.
3. Providing education programs for creating an informed citizenry.
4. Providing for promotional capabilities to assure that the corporation's plans and policies are sufficiently and favorably publicized.
5. Providing for continuous and effective regulatory and enforcement activities.
6. Providing for continuous updating of the comprehensive plan as required.

APPENDIX A

GENERAL PHYSICAL AND SOCIO ECONOMIC FEATURES OF THE PLANNING AREA

The planning area includes the State of Rhode Island in its entirety. The state encompasses slightly over 1,200 square miles, 13 percent of which is permanently covered with surface water. As shown in Figure A-1, the state is divided into thirty nine municipalities, eight of which are incorporated as cities. These include Central Falls, Cranston, East Providence, Newport, Pawtucket, Providence, Warwick and Woonsocket. All of the municipalities and land area they encompass, are listed in Table A-2.

The state is also divided into five counties. There is no county government in Rhode Island, and counties do not play a significant role in state or local government.

A. Socio-Economic Background Data

1. Population

Table A-1 shows the present and projected population for every municipality in the state in five year increments up to 1990. It also shows the percent increase from 1970 to 1990.

Table A-2 shows the existing and projected population density for each municipality. At the present time, Rhode Island is the second most densely populated state in the nation.

Rhode Island is very close to the national average in terms of the population's sex and age group composition, as shown in Table A-3. As is the case with the rest of New England, however, Rhode Island has a slightly larger percentage of population over 45 years of age than does the United States as a whole.[1]

2. Economy

In 1850, approximately 80 percent of the states land area was

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[1] U.S. Department of Agriculture Soil Conservation Service, Rhode Island Resource Conservation and Development Plan (West Warwick, Rhode Island: March, 1973), p.8.

FIGURE A-1

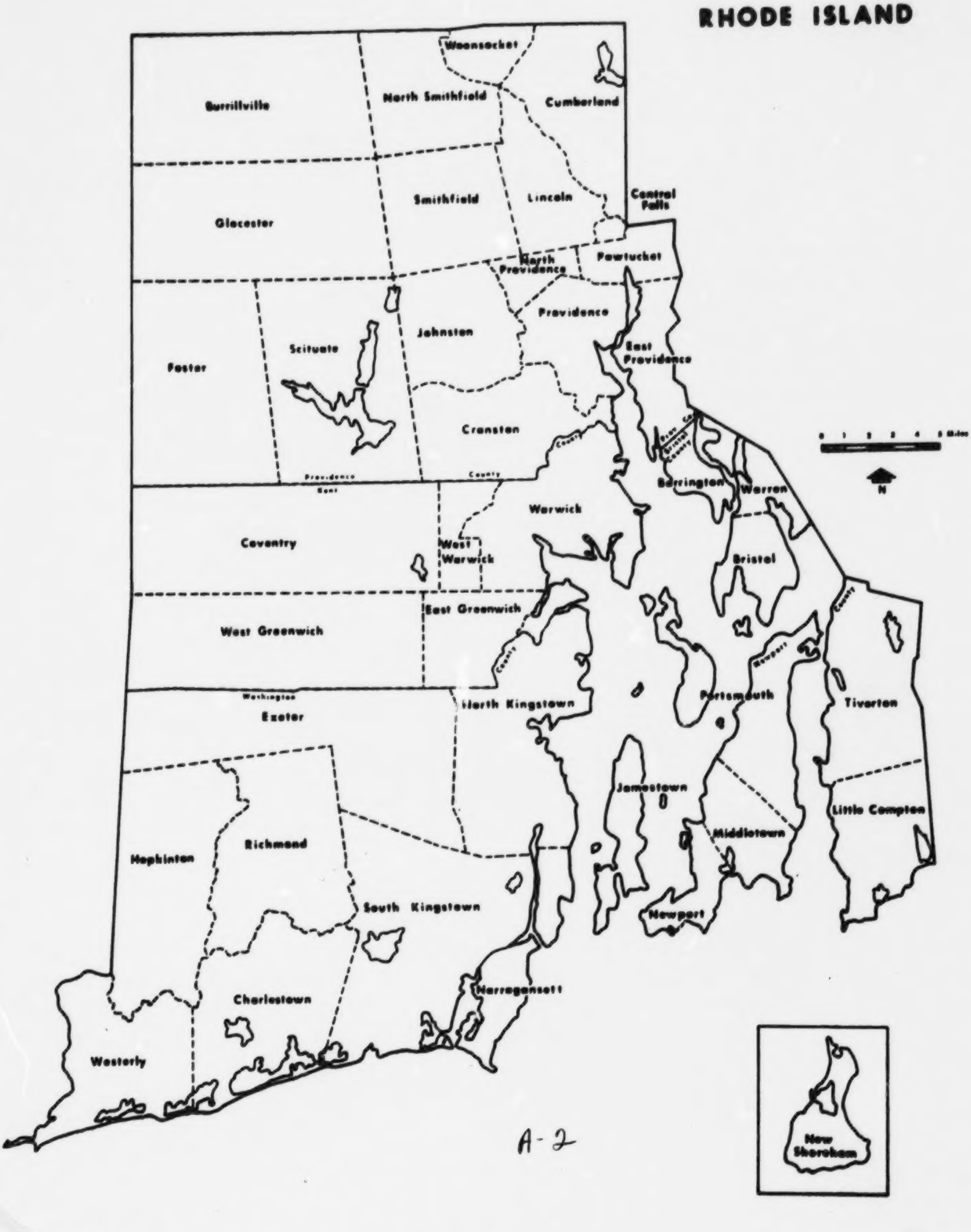
RHODE ISLAND
Woonsocket
Burrillville
North Smithfield
Cumberland
Glocester
Smithfield
Lincoln
Central Falls
North Providence
Pawtucket
Providence
Foster
Scituate
Johnston
East Providence
Cranston
Providence County
Kent
County
Bristol County
0 1 2 3 4 5 Miles
N
Barrington
Warren
Warwick
Coventry
West Warwick
Bristol
West Greenwich
East Greenwich
County
Newport
Washington
Exeter
North Kingstown
Portsmouth
Tiverton
County
Jamestown
Little Compton
Middletown
Hopkinton
Richmond
Newport
South Kingstown
Narragansett
Charlestown
Westerly
New Shoreham

TABLE A-1

RHODE ISLAND PRELIMINARY POPULATION PROJECTIONS TO 1990 1/
by County, City and Town

(in thousands)

	1970 2/	1975	1980	1985	1990	Percent Increase per year 1970-90
Bristol County	45.9	48.2	50.9	54.1	57.5	1.3%
Barrington	17.6	18.7	20.2	21.8	23.6	1.7
Bristol	17.9	18.4	19.0	19.8	20.6	.7
Warren	10.5	11.1	11.7	12.5	13.3	1.3
Kent County	142.4	154.3	164.2	173.9	184.2	1.5
Coventry	22.9	25.5	28.0	30.0	32.1	2.0
East Greenwich	9.6	11.0	12.5	14.4	16.6	3.6
WARWICK	83.7	91.0	96.0	101.0	105.9	1.3
West Greenwich	1.8	2.1	2.4	2.5	2.9	3.1
West Warwick	24.3	24.7	25.3	26.0	26.7	.5
Newport County	94.2	99.6	107.2	114.0	120.7	1.4
Jamestown	2.9	3.1	3.3	3.5	3.7	1.4
Little Compton	2.4	2.5	2.6	2.7	3.0	1.2
Middletown	29.3	31.0	34.5	36.5	38.1	1.5
NEWPORT	34.6	35.0	36.5	38.7	41.0	.9
Portsmouth	12.5	13.8	15.0	16.2	17.5	2.0
Tiverton	12.6	14.2	15.3	16.4	17.4	1.9
Providence County	581.5	594.4	617.9	646.6	674.4	.8
Burrillville	10.1	10.5	10.8	11.2	11.7	.8
CENTRAL FALLS	18.7	18.8	19.2	19.9	20.6	.5
CRANSTON	74.3	77.0	80.0	83.3	86.0	.8
Cumberland	26.6	30.0	33.0	36.5	40.0	2.5
EAST PROVIDENCE	48.2	52.0	55.5	58.9	63.1	1.5
Foster	2.6	2.9	3.2	3.5	4.0	2.7
Glocester	5.2	6.1	6.7	7.2	7.7	2.4
Johnston	22.0	24.6	26.6	28.6	30.7	2.0
Lincoln	16.2	16.9	17.6	18.4	19.3	1.0
North Providence	24.3	26.4	28.4	30.2	32.1	1.6
North Smithfield	9.3	10.0	10.6	11.5	12.6	1.8
PAWTUCKET	77.0	76.5	78.6	81.1	83.1	.4
PROVIDENCE	179.1	172.9	175.5	182.0	187.0	.2
Scituate	7.5	8.4	9.1	9.6	10.2	1.8
Smithfield	13.5	15.3	16.8	18.3	19.8	2.3
WOONSOCKET	46.8	46.1	46.3	46.4	46.5	0
Washington County	85.7	91.6	96.7	103.1	110.0	1.4
Charlestown	2.9	3.4	3.6	4.0	4.5	2.8
Exeter	3.2	3.5	3.8	4.1	4.8	2.5
Hopkinton	5.4	5.8	6.2	6.6	7.1	1.6

TABLE A-1 (Continued)

	1970 2/	1975	1980	1985	1990	Percent Increase per year 1970-90
New Shoreham	.5	.5	.5	.5	.6	1.0
North Kingstown	29.8	31.4	32.4	34.1	35.5	1.0
Richmond	2.6	2.8	3.0	3.2	3.5	1.7
South Kingstown	16.9	17.9	18.6	20.0	21.0	1.2
Westerly	17.2	18.8	20.1	21.6	23.5	1.8
STATE	949.7	988.1	1,036.9	1,091.7	1,146.8	1.1

1/ Source: Rhode Island Statewide Planning Program - March, 1972 - Preliminary Projections.

2/ U.S. Census count as of April 1, 1970. Totals may not add, due to independent rounding.

TABLE A-2

POPULATION DENSITIES

Town or City Code Name	Square Miles	1970 Population	1970 Density	1990 Population	1990 Density
01 Barrington	8.5	17,600	2,071	23,600	2,776
02 Bristol	9.9	17,900	1,808	20,600	2,081
03 Burrillville	57.6	10,100	175	11,700	203
04 Central Falls	1.3	18,700	14,385	20,600	15,846
05 Charlestown	38.5	2,900	75	4,500	117
06 Coventry	62.9	22,900	364	32,100	510
07 Cranston	28.2	74,300	2,635	86,000	3,050
08 Cumberland	28.6	26,600	930	40,000	1,399
09 East Greenwich	15.9	9,600	604	16,600	1,044
10 East Providence	13.8	48,200	3,493	63,100	4,572
11 Exeter	59.2	3,200	54	4,800	81
12 Foster	52.2	2,600	50	4,000	77
13 Glocester	56.5	5,200	92	7,700	136
14 Hopkinton	44.1	5,400	122	7,100	161
15 Jamestown	9.8	2,900	296	3,700	377
16 Johnston	25.1	22,000	876	30,700	1,223
17 Lincoln	13.4	16,200	1,209	19,300	1,440
18 Little Compton	21.9	2,400	110	3,000	137
19 Middletown	13.4	29,300	2,187	38,100	2,843
20 Narragansett	14.4	7,100	493	9,500	660
21 Newport	7.3	34,600	4,740	41,000	5,616
22 New Shoreham	11.0	500	45	600	54
23 North Kingstown	44.2	29,800	674	35,500	803
24 North Providenc	5.9	24,300	4,119	32,100	5,441
25 North Smithfield	25.4	9,300	366	12,600	496
26 Pawtucket	8.9	77,000	8,652	83,100	9,337
27 Portsmouth	23.8	12,500	525	17,500	735
28 Providence	18.9	179,100	9,476	187,100	9,899
29 Richmond	41.8	2,600	62	3,500	84
30 Scituate	55.3	7,500	136	10,200	184
31 Smithfield	27.6	13,500	489	19,800	717
32 South Kingstown	63.5	16,900	266	21,000	331
33 Tiverton	31.4	12,600	401	17,400	554
34 Warren	6.6	10,500	1,590	13,300	2,015
35 Warwick	36.3	83,700	2,305	105,900	2,917
36 Westerly	29.2	17,200	589	23,500	805
37 West Greenwich	51.5	1,800	34	2,900	56
38 West Warwick	8.2	24,300	2,963	26,700	3,256
39 Woonsocket	8.8	46,800	5,318	46,500	5,284
State Total	1,080.0	949,700	879	1,146,800	1,062

used for active agricultural purposes. At the present time less than 5 percent of the land is in an active agricultural use and a continuous decline is projected to at least the end of the century. The agricultural based economy was first replaced by a manufacturing economy based largely on textiles, and then in recent years, by a mixed manufacturing and services economy in which non-manufacturing employment now provides more than three-fifths of the jobs available. Manufacturing, however, still remains an important component of the total economy. In the past few years the manufacturing output has exceeded two million dollars annually.[2]

The Port of Providence, which is New England's third largest in tonnage handled, the U.S. Navy installations, the tourist and resort business, and commercial trucking, are among the major factors in the state's economy.[3]

TABLE A-3

PERCENTAGE DISTRIBUTION OF THE POPULATION BY SEX, 1965

	Rhode Island			United States		
Age	Total	Male	Female	Total	Male	Female
All ages	100.0	48.8	51.2	100.0	49.1	50.9
Under 5	9.6	4.9	4.7	10.5	5.4	5.2
5-14	18.9	9.6	9.3	20.4	10.4	10.0
15-44	39.4	19.8	19.6	39.6	19.5	20.1
45-64	21.5	10.1	11.4	20.1	9.7	10.4
65 and Over	10.6	4.4	6.2	9.4	4.1	5.3

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[2] Rhode Island Statewide Planning Program and Rhode Island Department of Natural Resources, Plan for Recreation, Conservation and Open Space (Providence: January, 1971) pp. 33 & 34.

[3] Ibid., p. 34.

3. Employment and Labor Force

In 1970, the state's labor force numbered 396,600, and the number of persons actually employed was 376,100. By 1990 the labor force is expected to total approximately 479,400, an increase of 21 percent over the present.[4]

Table A-4 shows the average number of employees in the industries covered by the Rhode Island Employment Security Act, for 1961, 1967 and 1971.

4. Tax Base

The total assessed valuation, the total net debt, the net bonded debt, the notes payable and the total tax levy for each municipality in the state in 1970, is shown in Table A-5.

TABLE A-4

1971 STATISTICS ON RHODE ISLAND INDUSTRIAL EMPLOYMENT [5]

	Average Number of Employees		
Industry	1961	1967	1971
Agriculture, Forestry, Fisheries	1,140	1,325	1,472
Contract Construction	12,037	15,608	13,948
Finance, Insurance, Real Estate	12,602	14,334	15,871
Manufacturing	116,307	127,272	112,801
Mining and Quarrying	111	191	120
Service Industries	19,053	25,508	29,272
Transportation, Communication, Utilities	13,183	14,008	14,685
Wholesale and Retail Trade	53,461	63,522	70,049
All Industries	227,894	261,768	258,218

Source: Based "Employment Covered by the R.I. Employment Security Act" Rhode Island Department of Employment Security, Providence, R.I., Employment figures reflect a 9 month average.

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[4] Rhode Island Statewide Planning Program, State Land Use Policies and Plan (Providence: January, 1973), p.39.

[5] U.S. Department of Agriculture Soil Conservation Service, Op.Cit., p. 15.

TABLE A-5

RHODE ISLAND TAX BASE - 1970

Town or City Code Name	Total* Assessed Valuation (12-31-70)	FY 1970* Total Net Debt	Net* Bonded Debt 1970	Notes* Payable** 1970	Total* Tax Levy 1970
01 Barrington	109,004,950	5,335,000	5,335,000	-	4,988,240
02 Bristol	62,865,100	2,651,133	2,315,000	336,133	3,595,880
03 Burrillville	42,251,800	2,023,900	1,970,000	53,900	1,408,186
04 Central Falls	49,859,431	712,000	712,000	-	2,471,467
05 Charlestown	20,167,563	93,000	-	93,000	578,348
06 Coventry	75,202,930	3,785,000	3,365,000	150,000	3,425,710
07 Cranston	315,806,700	30,500,000	23,551,500	5,948,500	17,852,979
08 Cumberland	117,301,000	7,052,000	6,552,000	500,000	4,519,512
09 East Greenwich	64,587,960	4,700,000	4,700,000	-	2,566,523
10 East Providence	312,166,490	21,350,000	15,150,000	6,200,000	13,865,001
11 Exeter	7,478,524	-	-	-	338,029
12 Foster	10,564,350	98,714	73,000	25,714	591,664
13 Glocester	16,100,309	5,000	5,000	-	946,698
14 Hopkinton	30,785,413	690,000	690,000	-	980,635
15 Jamestown	23,002,007	201,000	174,000	27,000	856,825
16 Johnston	76,581,129	4,431,800	4,412,000	19,800	3,800,700
17 Lincoln	71,371,479	5,901,000	4,915,000	986,000	3,407,328
18 Little Compton	15,394,150	-	-	-	454,127
19 Middletown	63,467,600	6,236,000	4,236,000	2,000,000	2,827,839
20 Narragansett	97,137,720	2,074,436	1,901,000	173,436	2,302,085
21 Newport	79,624,900	9,087,000	7,642,000	1,445,000	7,225,504
22 New Shoreham	6,895,535	80,000	-	80,000	193,075
23 North Kingstown	107,950,540	4,385,480	4,131,000	254,480	4,098,419
24 North Providence	90,698,980	5,120,000	5,120,000	-	5,125,055
25 North Smithfield	32,910,218	2,622,500	2,400,000	222,500	2,062,225
26 Pawtucket	312,780,375	17,692,000	17,692,000	-	16,681,280

TABLE A-5 (Con't)

Town or City Code Name	Total* Assessed Valuation (12-31-70)	FY 1970* Total Net Debt	Net* Bonded Debt 1970	Notes* Payable** 1970	Total* Tax Levy 1970
27 Portsmouth	66,097,575	3,276,500	2,015,000	1,261,500	2,423,482
28 Providence	836,527,170	74,013,000	57,675,000	16,339,000	42,604,398
29 Richmond	12,765,253	449,000	-	449,000	463,184
30 Scituate	35,691,725	1,675,380	1,562,000	113,380	1,838,124
31 Smithfield	80,463,420	3,849,000	3,849,000	-	2,902,152
32 South Kingstown	98,555,490	2,360,000	1,500,000	860,000	3,537,729
33 Tiverton	63,028,030	1,895,000	1,895,000	-	2,457,167
34 Warren	55,986,450	2,871,000	2,699,000	172,000	2,030,473
35 Warwick	418,874,676	25,612,500	16,862,500	8,750,000	19,956,398
36 Westerly	62,437,805	2,920,000	2,895,000	25,000	3,425,869
37 West Greenwich	8,118,660	20,000	-	20,000	299,222
38 West Warwick	95,359,644	4,217,600	2,970,000	1,247,600	3,958,926
39 Woonsocket	151,553,600	9,571,000	8,146,000	1,425,000	9,417,816
State Total	4,197,406,651	269,556,943	219,379,000	50,177,943	202,478,214

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* R.I. Development Council, The Rhode Island Economy: Summary and Trends (Providence: 1972), pp. 147, 149.

** R.I. Department of Community Affairs, Annual Report on Local Government, Finances and Tax Equalization (Providence: 1971), p. 16.

Although exceptions as well as other allowances are provided for in the computation of indebtedness, the municipalities in the state are restricted from occurring any debt for money borrowed which would increase its aggregate indebtedness to an amount greater than 3 percent of the value of its taxable property.[6]

B. Physical Characteristics

1. Climate

Rhode Island is typical of the other New England states in the sense that its climate is marked by four distinct seasons.

The temperature and weather conditions of the state are locally influenced by Narragansett Bay and the Atlantic Ocean. These bodies of water exert a moderating effect on the climate so that periods of extreme hot or cold are of relatively short duration. The prevailing winds are northwesterly in winter and southwesterly in summer. The mean monthly temperature of Rhode Island is 50.5 degrees Fahrenheit. The coldest month is February which has a mean temperature of slightly over 29 degrees Fahrenheit, and the warmest is July with a mean temperature of slightly over 72 degrees Fahrenheit.[7] The average annual growing season extends from May 15 through September 15. Precipitation ranges from a high of 40 inches per year in the northwest corner of the state to a low of slightly less than 31 inches per year in the extreme southeast corner.

2. Topography and Geology

Rhode Island lies in two major physiographic sections of the New England physiographic province. The northwest third of the state, which consists primarily of relatively low rounded hills and narrow valleys, lies within ghe New England Upland section. The balance of the state lies in the Seaboard Lowland section of the New England Province. Much of this portion of the state has been submerged forming Narragansett Bay, the islands of which were formed by the higher elevations of the submerged hills.[8]

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[6] Section 45-12-2 of the General Laws of 1956 as amended.

[7] Rhode Island Statewide Planning Program and Rhode Island Department of Natural Resources, Plan for Recreation, Conservation and Open Space. Op.cit., p. 38.

The surface altitudes in the state range from sea level along the coast to 812 feet above sea level at Jerimoth Hill in the town of Foster, in the northwest corner of the state. In most of the state, surface altitudes are less than 400 feet and in about half of the state they are less than 200 feet.

In the upland area the bedrock geology is underlain mostly by granite rock, but the eastern portion of this area also contains irregular patches of schist, quartizite and greenstone. The lowland area of the state is underlain by downfolded and downfaulted beds of conglomerate, sandstone, shale, and meta antracite, all of the carboniferous age. In many places the bedrock is exposed but in general it is covered by a layer of unconsolidated glacial drift material of varying thickness. These deposits are described as being of either till or outwash material.[9]

The till or hardpan deposits are generally unconsolidated material consisting of boulders, pebbles, sand, silt and clay mixed together without sorting and without bedding. Some of these till deposits are known to exist in thickness exceeding 100 feet, but on the average they are only a few feet thick.[10]

The till in Rhode Island is relatively impermeable and, like clay, yields water very slowly. It does however yield sufficient water for household and farm use and about half the water pumped from farm and household wells in the state is obtained from till.[11]

Overlying the bedrock and lying chiefly in the valley areas, are outwash deposits of bedded gravels, sands, silts, and clays that were strewn out by the meltwater from the glaciers which covered the land some fifteen thousand years ago. These deposits can be as much as 100 or even 200 feed thick.[12]

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[8] Rhode Island Statewide Planning Program and Rhode Island Department of Natural Resources, Plan for Recreation, Conservation and Open Space, Op.cit. pp. 35 & 36.

[9] Ibid., p. 36.

[10] Ibid., p. 36.

[11] U.S. Geological Survey, The Ground Water Resources of Rhode Island (Providence: 1953), p. 28.

[12] Rhode Island Statewide Planning Program, and Rhode Island Department of Natural Resources, Plan for Recreation, Conservation and Open Space, Op.cit., p. 36.

Outwash deposits are the most productive aquifers in Rhode Island because of the abundance of well sorted, course-grained particles. Withdrawals from these deposits have been relatively small, however, and these deposits are not being fully utilized. Total withdrawals from these deposits average no more than an estimated 18 million gallons per day.[13]

C. Natural Resources

The greatest natural resource of Rhode Island is surface and underground water. Sand, gravel and crushed stone for general construction purposes are the most important of the solid mineral resources of the state.

1. Solid Mineral Resources of Rhode Island

Throughout the western part of the state there are abundant deposits of granite which have been used for many years as building and monumental stone. In recent years, however, the production of this material has been reduced considerably.[14] It is interesting to note, however, that the recent discovery of a black granite deposit in the Foster area has caused a great deal of interest and a Vermont company is reportedly making plans to quarry the material.[15] A Limestone Quarry in Lincoln produces an estimated 50,000 tons of calcite limestone annually, and it employs a complement of 21 full-time people.[16]

Relatively large deposits of Cumberlandite are know to exist, particularly in the northeastern corner of the state. The recovery of this material is not economically feasible at present, however.[17]

The bulk of the sand deposits in the state are located in the towns of Burrillville, Glocester, North Smithfield, Coventry,

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[13] Ibid., p. 31.

[14] U.S. Geological Survey, The Ground Water Resources of Rhode Island, Op.Cit., p. 16.

[15] U.S. Department of Agriculture, Soil Conservation Service, Rhode Island Resource Conservation and Development Plan, Op.Cit., p. 24.

[16] Ibid., p. 25.

[17] U.S. Geological Survey Bulletin 1295, Bedrock Geology of Rhode Island, (Washington: 1971), p. 59.

West Greenwich, Charlestown, and Richmond. Gravel is found in all of the municipalities west of Narragansett Bay but the availability is limited in the more urbanized communities. Sand and gravel is very scarce in the area east of Narragansett Bay. The total estimated volume of sand and gravel in the state approximates 54,317,000 cubic yards.[18]

2. Water Resources

The State of Rhode Island is quite fortunate in terms of the availability of water resources. Large additional surface and groundwater sources can still be developed economically.[19]

The fourteen major public water supply systems in the state have a combined dependable yield of some 150 mgd of which 75 percent is obtained from surface water supplies.[20]

Various consultant's reports on the amount of additional potentially developable surface sources differ somewhat, depending on the schemes and combinations of developments that are recommended. But a figure of an additional 100 million gallons per day of surface sources appears likely.[21]

It is estimated that there are substantial supplies of groundwater in 8 of the 17 groundwater basins, and throughout the state the additional, potential average daily groundwater yield is estimated to be 82.5 mgd.[22]

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[18] Kendall Moultrop, Rhode Island Aggregate Survey (Kingston: June, 1964), p. 4

[19] Metcalf and Eddy, Inc., Report to the Water Resources Coordinating Board, State of Rhode Island on a Development Plan for the Water Supply Resources of Rhode Island (Providence: June, 1967), p. 38

[20] Ibid., p. 5.

[21] Rhode Island Statewide Planning Program, Plan for the Development and Use of Public Water Supplies (Providence: September, 1969), p. 9.

[22] Metcalf and Eddy, Inc., Op.Cit., p. 50.

D. Land Use

Table A-6 shows the distribution of land use in the state in ten major categories, as it was in 1960 and as projected for 1990 in the state land use plan.[23] It is interesting to note that even by 1990, as estimated 52% of the state's land area will remain in the woodland and open land category, if the plan is implemented.

The distribution of land use by municipality in accordance with the land use plan for 1990, is shown in Table A-7, and illustrated in Figure A-2.[24]

E. Transportation Facilities

The road system in Rhode Island serves to connect all sections of the state, with the exception, of course, of Block Island, with the urban center. The interstate highway system and the Penn-Central Railroad provide ground transportation connections between the state, the region, and the nation. Air transportation is provided for by the five state operated airports located in Warwick, Smithfield, Middletown, Westerly and Block Island.[25]

Public transportation is provided by the Rhode Island Public Transit Authority, which serves the Providence Metropolitan area, and by three privately owned bus companies. The largest of these, Bonanza Bus Lines provides extensive service to the residents in the southern part of the state and serves to connect most of the southeast and southwest parts of Rhode Island to the urban core area. The A.B.C. Bus Lines Company, and Transit Line Inc., are smaller systems which serve northwestern and Newport respectively.

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[23] Rhode Island Statewide Planning Program, State Land Use Policies and Plan (Draft Report), (Providence: January, 1973), p. 177.

[24] Rhode Island Statewide Planning Program, State Land Use Policies and Plan, Op.Cit., p. 176.

[25] U.S. Department of Agriculture - Soil Conservation Service, Rhode Island Resource Conservation and Development Plan, Op.Cit., p. 17.

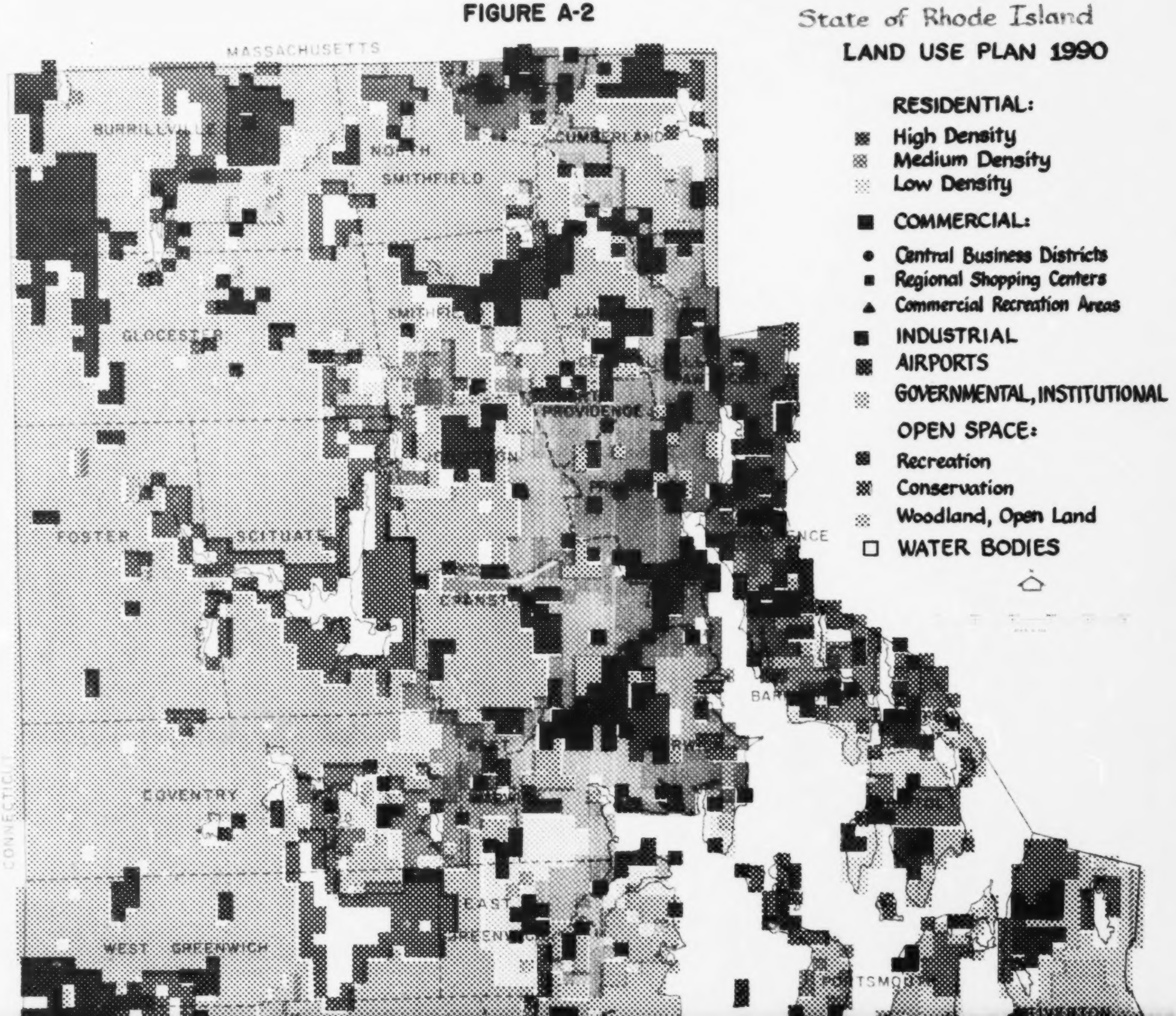
TABLE A-6

DISTRIBUTION OF LAND USE BY TOWN OR CITY, 1990

LAND USE CATEGORY (in acres, rounded to the nearest 100 acres)

TOWN OR CITY	Residential	Commercial	Industrial	Governmental-Institutional	Airports	Open Space: Recreation	Open Space: Conservation	Open Space: Woodland, Open Land
Barrington	3,700	100	-	400	-	700	600	-
Bristol	4,000	100	400	200	-	600	200	800
Burrillville	5,100	-	300	100	-	8,900	3,300	16,400
Central Falls	600	-	300	-	-	-	-	-
Charlestown	2,600	-	300	700	-	6,000	1,700	12,100
Coventry	8,100	-	500	-	-	1,300	1,200	26,500
Cranston	7,000	100	1,200	900	-	2,100	-	6,400
Cumberland	5,300	-	800	-	-	2,300	800	7,400
East Greenwich	4,700	100	400	-	-	400	500	3,900
East Providence	4,200	300	1,400	-	-	2,000	300	-
Exeter	900	-	-	200	-	7,100	1,700	24,200
Foster	800	-	-	-	-	600	1,900	28,500
Glocester	2,600	-	-	-	-	4,100	300	27,500
Hopkinton	2,800	-	-	-	-	3,000	-	21,300
Jamestown	1,600	-	-	300	-	1,800	600	1,800
Johnston	4,900	100	300	-	-	1,900	200	7,000
Lincoln	2,900	400	1,300	500	-	1,900	100	4,800
Little Compton	1,700	-	-	-	-	700	2,000	8,700
Middletown	4,800	200	200	900	200	600	900	600
Narragansett	2,900	100	300	300	-	1,800	800	2,200
Newport	4,200	100	100	600	-	500	100	-
New Shoreham	1,100	-	-	-	100	400	1,800	3,400
North Kingstown	5,000	100	800	3,700	-	2,200	600	15,400
North Providence	2,900	-	100	100	-	500	-	-
North Smithfield	2,600	-	100	-	-	300	500	11,300
Pawtucket	4,000	300	600	100	-	300	400	-
Portsmouth	3,100	-	800	700	-	1,800	1,600	5,500
Providence	8,500	300	2,100	700	-	600	-	-
Richmond	1,000	-	100	-	-	5,200	-	18,800
Scituate	1,700	-	-	-	-	-	9,400	18,700
Smithfield	2,900	100	1,400	500	600	1,200	400	8,900
South Kingstown	5,200	100	1,000	1,900	-	3,400	5,000	20,300
Tiverton	5,700	-	800	-	-	900	2,100	9,200
Warren	2,000	100	300	100	-	100	600	600
Warwick	13,200	1,200	1,900	1,100	1,000	2,200	700	100
Westerly	7,000	100	300	-	400	2,400	2,700	6,100
West Greenwich	600	-	100	-	-	3,200	5,400	19,400
West Warwick	3,000	-	400	-	-	1,000	-	900
Woonsocket	3,400	300	700	-	-	500	-	100
STATE TOTAL								
Acres	148,300	4,200	19,300	14,000	2,300	74,600	48,400	338,800
Square Miles	232	7	30	22	4	117	76	529
Percent of Total	23	1	3	2	-	12	7	52

FIGURE A-2


State of Rhode Island
LAND USE PLAN 1990
RESIDENTIAL:
▩ High Density
▩ Medium Density
▩ Low Density
■ COMMERCIAL:
● Central Business Districts
■ Regional Shopping Centers
▲ Commercial Recreation Areas
■ INDUSTRIAL
▩ AIRPORTS
▩ GOVERNMENTAL, INSTITUTIONAL
OPEN SPACE:
▩ Recreation
▩ Conservation
▩ Woodland, Open Land
☐ WATER BODIES
MASSACHUSETTS
CONNECTICUT
BURRILLVILLE
NORTH SMITHFIELD
CUMBERLAND
SMITHFIELD
GLOCESTER
PROVIDENCE
FOSTER
SCITUATE
CRANSTON
COVENTRY
WEST GREENWICH
EAST GREENWICH
PORTSMOUTH

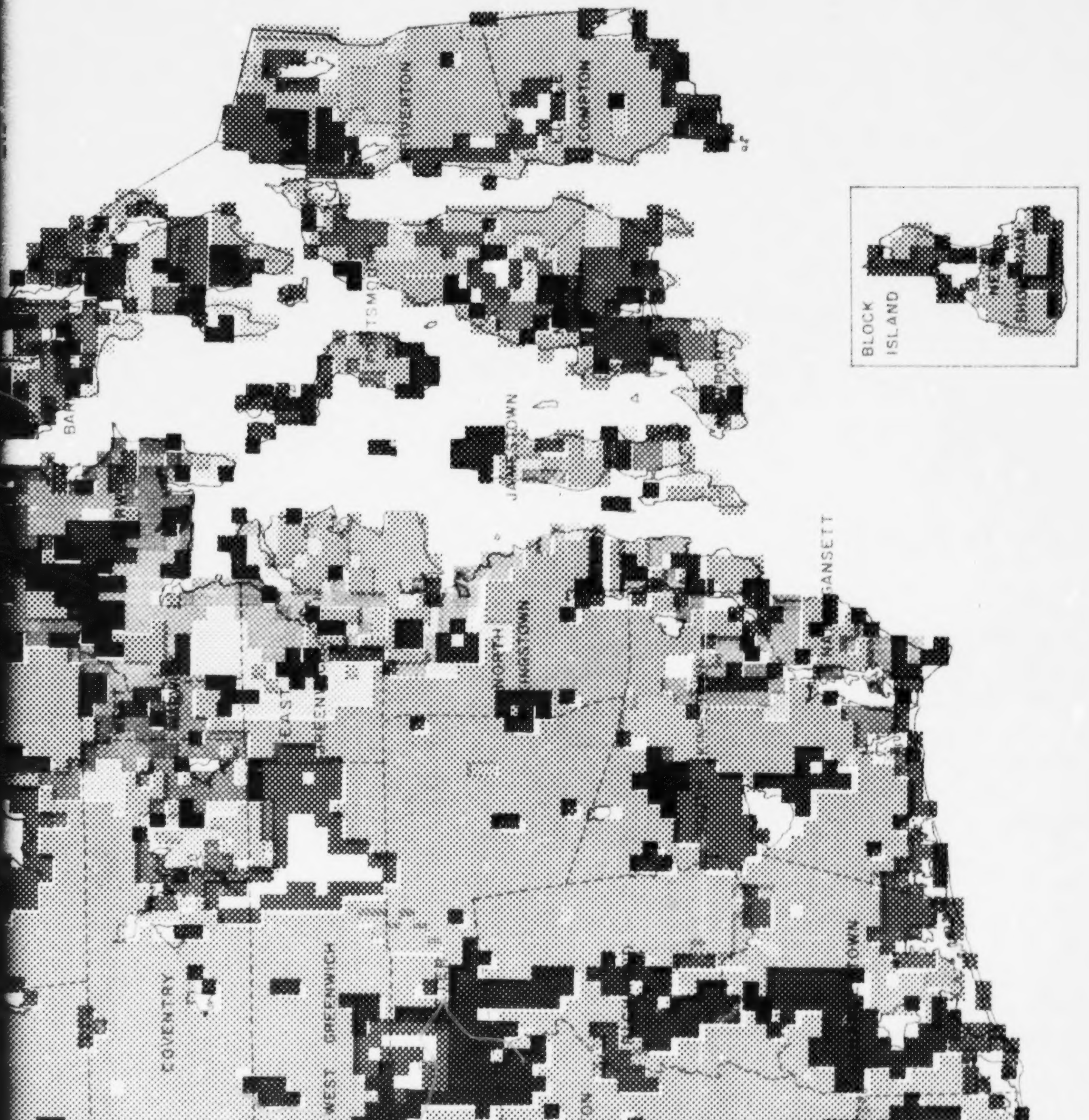


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TABLE A-7

DISTRIBUTION OF LAND USE IN THE STATE, 1960 AND 1990

	1960 (Actual Use)			1990 (Allocation)		
	ACRES	SQ.MI.	PERCENT	ACRES*	SQ.MI.	PERCENT
Residential	54,594	85	8	148,300	232	23
Commercial	5,833	9	1	4,200	7	1
Industrial	5,252	8	1	19,300	30	3
Governmental-Institutional	17,002	27	3	14,000	22	2
Airports	2,554	4	-	2,300	4	-
Roads	23,231	36	4	31,900**	50**	-
Other Transportation, public utilities	10,903	17	2	-	-	-
Recreation	35,571	56	5	74,600	117	12
Conservation	-	-	-	48,400	76	7
Woodland, Open Land	496,623	776	76	338,800	529	52
TOTAL LAND AREA	651,563	1,018	100	649,900	1,017	100
Urban and committee	154,940	242	24	311,100	488	48
Woodland, Open land	496,623	776	76	338,800	529	52

* Rounded to nearest 100 acres.

** Estimated; not included in total because is encompassed in other categories.

APPENDIX B

DRAFT

AN ACT CREATING THE RHODE ISLAND SOLID WASTE MANAGEMENT CORPORATION AND SPECIFYING ITS POWERS AND DUTIES

DRAFT SOLID WASTE LEGISLATION

SECTION 1 SHORT TITLE. - This act shall be known and may be cited as the "Rhode Island Solid Waste Management Corporation Act."

SECTION 2. LEGISLATIVE FINDINGS. - The General Assembly recognizes and declares that:

(1) Many municipalities have serious solid waste management problems and are hard pressed to provide adequate services at reasonable costs;

(2) Inefficient practices and poor management techniques result in pollution problems and environmental deterioration and result in a waste of land and other valuable resources;

(3) Solid waste management problems are statewide in scope and concern and necessitate state action through technical assistance and strong leadership in the application of new and improved methods and processes to reduce the amount of solid waste that must be disposed of and to promote environmentally acceptable and economically sound solid waste management;

(4) That the continuing technological processes and improvements in the methods of manufacture, packaging, and marketing of consumer products, has resulted in an ever mounting increase, and in a change in the characteristics of the mass of material being discharged;

(5) That the economic and population growth of Rhode Island and the improvements in the standards of living enjoyed

by our population, have required increased industrial production together with related commercial operations to meet these needs, and this has resulted in a rising tide of discharged materials; and

(6) That the failure or inability to economically recover and recycle materials and energy resources from solid waste results in the unnecessary waste and depletion of our natural resources.

SECTION 3. DECLARATION OF POLICY. -

The following are declared to be policies of the state of Rhode Island:

(1) That the ultimate solid waste management objective of the state is to maximize resource recovery from solid waste and maximize recycling and reuse of such resources;

(2) That solid waste management facilities and projects are to be implemented either by the state or under state auspices, in furtherance of these goals;

(3) That appropriate governmental structure, processes and support must be provided so that an effective and integrated statewide network of solid waste management facilities may be planned, financed, developed and operated for the benefit of the people and municipalities of the state;

(4) That solid waste management activities be conducted in an environmentally sound manner;

(5) That private industry be encouraged to continue playing a key role in the state's solid waste management programs;

(6) That solid waste management facilities and services be provided for municipalities, institutions and persons in the state at reasonable costs, by state solid waste management systems and facilities, where such services and facilities are considered necessary and desirable in accordance with a comprehensive statewide plan for the development of such solid waste management facilities; provided however that municipalities shall be free to use their own municipal solid waste management facilities or to develop new facilities, where such facilities are in conformance with state standards and regulations.

(7) That provision shall be made for planning, research and development, and appropriate innovation in the design, management and operation of the state's system for solid waste management, in order to permit continuing improvement and provide adequate incentives and processes for lowering operating and other costs;

(8) That the solid waste management corporation established pursuant to this act shall plan and implement solid waste management facilities where necessary and desirable throughout the state, in accordance with applicable state regulations.

SECTION 4. LEGISLATIVE INTENT. -

In furtherance of these policies it is the intent of this legislation to create a Solid Waste Management Corporation, as hereinafter defined.

(1) The corporation will prepare and implement a functional level plan for an integrated statewide system of solid waste management facilities;

(2) Municipal participation in the statewide system of solid waste management facilities that will be developed by the corporation will be on a voluntary basis. If a municipality desires to use its own existing facilities or to develop new solid waste facilities within its own boundaries, it will be free to do so providing such facilities meet the established environmental standards of the department of health;

(3) The corporation will make its waste management facilities as herein provided for, available under contract to any municipality, institution, person at reasonable fees established by the corporation;

(4) Any revenues received by the corporation through the fees it charges for the use of facilities and services, or through the sale of the material and energy resources recovered from the wastes it processes in the solid waste facilities within its jurisdiction, shall be used by said corporation to finance its administrative and contractural costs and to pay off its loans and other indebtedness and to otherwise provide the financial support that is required for the corporation to maintain financial solvency.

SECTION 5. DEFINITIONS. -

The following words and phrases shall have the meanings ascribed to them in this section unless the context clearly indicates otherwise:

(1) Corporation means the Rhode Island solid waste management corporation created and established pursuant to this act;

(2) State functional level solid waste management plan means that plan which will specify the location, size, and type of solid waste management facilities that may be required to develop an integrated statewide system for the effective management of solid waste in Rhode Island. It will also specify a proposed schedule by which the component facilities will be phased into the statewide system and it will provide for the administrative and financial requirements for implementing the plan.

(3) Solid waste management facility means any plant structure, equipment and other real and personal property, acquired, constructed or operated for the purpose of processing, treating or disposing of solid wastes, but not segregated solid wastes;

(4) Segregated solid waste means useful material which has been seperated from the waste stream at the generation source for purpose of recovering and recycling these materials.

(5) Resource recovery means the processing of solid wastes in such a way as to produce materials or energy which may

be used in manufacturing, agriculture and other processes.

(6) Recycling means the reuse of recovered resources in manufacturing, agriculture, power production, or other processes.

(7) Person means any individual, firm, institution, partnership, association or corporation, public or private, organized or existing under the laws of this state or other states including federal corporations but excluding municipalities.

(8) Waste management means actions taken to effectuate the receipt, storage, transportation and processing for resource recovery and for the ultimate disposal of solid waste.

(9) Solid Waste means garbage, refuse and other discarded solid materials generated by residential, institutional, commercial, industrial and agricultural sources but does not include solids or dissolved materials in domestic sewage.

(10) Municipality means any town or city within the state.

(11) Bonds means bonds of the corporation issued pursuant to the provisions of this act and the authorizing resolutions of said corporation.

(12) Notes means any notes of the corporation issued pursuant to this act and the resolutions of the authority, either in anticipation of and pending the issuance of bonds by said corporation or otherwise.

(13) Revenues means monies or income received by the corporation in whatever form, including but not limited to fees, charges, lease payments, interest payments on investments, payments due and owing on account of an instrument, contract or agreement between the corporation any municipality or person, gifts, grants, or any other monies or payments to which the corporation is entitled under the provisions of this act or any other law, or of any agreement, contract or indenture of the authority.

(14) Project means any solid waste management facility or any portion thereof which may be financed by the corporation under the provisions of this act.

SECTION 6. CREATION OF THE RHODE ISLAND SOLID WASTE MANAGEMENT CORPORATION. -

There is hereby authorized the creation and establishment of a public corporation of the state, having a distinct legal existence from the state and not constituting a department of the state government, with such politic and corporate powers as are set forth in this act, to be known as the Rhode Island Solid Waste Management Corporation, hereinafter referred to as the corporation, to carry out the provisions of this act. The corporation is hereby constituted a public instrumentality exercising public and essential governmental functions, and the exercise by the corporation of the powers conferred by this act shall be deemed and held to be the performance of an essential governmental function of the state.

It is the intent of the General Assembly by the passage of this act to authorize the incorporation of a public corporation and instrumentality and agency of the state for the purpose of the activities hereinafter authorized and to vest such corporation with all powers, authority, rights, priviliges and titles that may be necessary to enable it to accomplish such purposes. This act shall be liberally construed in conformance with the purpose expressed herein.

The powers of the corporation shall be vested in five (5) commissioners, three (3) of whom shall be appointed by the governor, one (1) of which shall be the chief elected officer of a city or town, one (1) of whom shall be appointed by the senate majority leader, and one (1) of whom shall be appointed by the speaker of the house. All shall serve until their respective successors are appointed and qualified. When this act shall take effect, the governor shall appoint one (1) commissioner to serve until the first day of March, 1975, one (1) to serve until the first day of March, 1976, one (1) to serve until the first day of March, 1977, and in the month of February, 1975 and in the month of February each year thereafter, the governor shall appoint a successor to the commissioner he has appointed, whose term expires that year, to hold office until the first day of March in the third year after their respective appointments; and the senate majority leader and the speaker of the house shall each appoint one (1) commissioner to serve until the first day of March, 1976, and in the month of February, 1976 and in the month of February every two years thereafter.

each shall appoint a successor to the commissioner each has named or that his predecessors in that office has named, whose term shall expire that year. Any vacancy occuring otherwise shall be filled in the same manner as the original appointment for the balance of the unexpired term.

The Governor shall designate a commissioner to serve as chairman. Any commissioner may be removed by the Governor for misfeasance, malfeasance or willful neglect of duty.

The commissioners shall elect from among their number a vice chairman and a treasurer annually and such other offices as they may determine. Meetings shall be held at the call of the chairman or whenever two commissioners so request. Three (3) commissioners shall constitute a quorum and any action taken by the corporation under the provisions of this act may be authorized by resolution approved by a majority but not less than three (3) of the commissioners present at any regular or special meeting. No vacancy in the membership of the corporation's board of commissioners shall impair the right of a quorum to exercise all the rights and perform all the duties of the corporation.

Commissioners shall receive no compensation for the performance of their duties hereunder but each such commissioner shall be reimbursed for his reasonable expenses incurred in carrying out such duties under this act.

SECTION 7. QUALIFICATION OF COMMISSIONERS. -

Each member of the corporation's board of commissioners, before entering upon his duties, shall take an oath to administer the duties of his office faithfully and impartially, and such oath will be filed in the office of the secretary of state.

No commissioner of the corporation shall be in the employ of or own any stock in or be in any way directly or indirectly financially interested in any private corporation or company engaged in the collection, processing, planning, transfer or disposal of solid waste. No commissioner shall, either personally or through a partner or agent, render any professional service to make or perform any business contract with or for any such private corporation or company; nor shall any commissioner, directly or indirectly, receive a commission, bonus, discount, present or reward from any such private corporation company.

SECTION 8. EMPLOYMENT OF EXECUTIVE DIRECTOR. -

The commissioners shall employ an executive director who shall administer, manage and direct the offices and business of the corporation, subject to the policies, control and direction of the commissioners. The commissioners may employ technical experts and such other officers, agents and staff and fix their qualifications, duties and compensation. The executive director and such technical experts, officers, agents, and staff and attorneys so employed shall not be subject to the provisions of the classified service. The commissioners may delegate to one or more of its agents or employees such administrative duties as it may deem proper to accomplish its purposes.

The secretary shall keep a record of the proceedings of the corporation and shall be custodian of all books, documents, and papers filed with the corporation and of its minutes, books and seal. He shall have authority to cause to be made, copies of all minutes and other records and documents of the corporation and to give certificate under the seal of the corporation that such copies are true copies and all persons dealing with the corporation may rely upon such certificate.

The corporation shall continue until its existence is terminated by law. At such time its holdings and assets shall pass to and become vested in the state of Rhode Island.

SECTION 9. PURPOSES OF THE CORPORATION. -

The purposes of the corporation shall be:

(1) The planning, design, construction, financing, management, ownership, operation and maintenance of transfer stations, waste processing facilities, resource recovery facilities, and all other solid waste management facilities deemed necessary by the corporation as being desirable, convenient or appropriate to carry out the provision of this act,

(2) The provision of solid waste management services to municipalities and persons within the state by receiving solid wastes at the corporation facilities, pursuant to contracts between the corporation and such municipalities, and persons, the recovery of resources and resource values from such solid wastes, and the production from such services and resource recovery operations, of revenues suffi-

cient to provide for the support of the corporation and its operations on a self sustaining basis with due regard to the provision of such services at a reasonable cost to the clients it has contracted with.

(3) The authorization through contractual arrangements of private industry for implementation of the corporation's plans and programs to the greatest degree possible, and for such other activities as may be considered necessary, desirable or convenient by the corporation; and

(4) Assistance with and coordination of efforts directed towards source separation of solid wastes for recycling purposes.

SECTION 10. GENERAL POWERS AND DUTIES. -

The corporation shall have all of the powers necessary and convenient to carry out and effectuate the purposes and provisions of this act including but without limiting the generality of the foregoing, the power to:

(1) Sue and be sued in its own name;

(2) Have an official seal and alter the same at pleasure;

(3) Have perpetual succession;

(4) Maintain an office at such place or places within the state as it may designate;

(5) Adopt and from time to time amend and repeal by-laws, rules and regulations, not inconsistent with this act;

(6) Employ a staff and fix their duties, qualifications and compensation;

(7) Retain by contract or employ counsel, auditors, engineers,

private consultants and advisors;

(8) Conduct such hearings, examinations and investigations as may be necessary and appropriate to the conduct of its business and purposes;

(9) Obtain access to public records and apply for the process of subpoena if necessary to produce books, papers, records and other data;

(10) Charge reasonable fees for the services it performs and provides;

(11) Purchase or otherwise acquire real or personal property, or any interest therein, on either a temporary or long term basis in its own name by gift, purchase, transfer, lease device, or otherwise on such terms and conditions as the corporation shall determine, or by the exercise of eminent domain in accordance with the provisions of chapter 9 of title 22 of the general laws as amended, and as herein provided for in section 13 of this act.

(12) To make and execute contracts and all other instruments necessary and convenient for the exercise of its powers and functions under this act;

(13) To make plans, surveys, studies and investigations necessary or desirable, in conformity with the state guide plan as promulgated and provided for by the state

planning council, and with due consideration to local plans and other state plans;

(14) To design or provide for the design of the solid waste management facilities that the corporation will construct or cause to be constructed, as well as designs for the alteration, reconstruction, improvement, enlargement or extension of facilities that are owned by the corporation;

(15) To construct or to cause to be constructed such solid waste transfer station facilities, processing facilities, resource recovery facilities and ultimate disposal facilities and such other solid waste management facilities as may be required by the corporation for the conduct of its activities as herein provided;

(16) To sell or lease to any person, all or any portion of a waste management project, for such consideration and upon such terms as the authority may determine to be reasonable;

(17) To own, operate and maintain waste management projects and make provision for their management;

(18) To enter upon lands and waters, upon giving due notice of intent of purpose, as may be necessary, to make surveys, soundings, borings and examinations in order to accomplish the purposes of this act;

(19) To enter into agreements or other transactions with and accept grants and the cooperation of the federal government

or any instrumentality thereof in furtherance of the purposes of this act, including but not limited to the development, maintenance, operation and financing of any solid waste project or facility and to do any and all things necessary in order to avail itself of such aid and cooperation;

(20) To receive and accept aid or contributions from any source of money, property, labor, or other things of value, to be held, used and applied to carry out the purposes of this act subject to such conditions upon which such grants and contributions may be made, including but not limited to gifts or grants from any governmental agency or instrumentality of the United States or this state, for any purpose consistent with this act;

(21) To review all municipal plans and proposals for the construction or installation of solid waste processing, resource recovery and disposal facilities;

(22) To undertake and to promote the conduct of research into source separation and source reduction techniques, facilities and systems and in other solid waste management areas for any purpose consistent with this act;

(23) To receive funds or revenues from the sale of products, materials, fuels and energy in any form derived from the processing of solid wastes by the systems, facilities,

and equipment under its jurisdiction;

(24) To borrow money from the state commercial banks or any other source and to issue its revenue bonds and notes from time to time and to use the proceeds thereof, for the purposes and powers of the corporation and to accomplish the purposes of this act and to pay all of the costs of the authority incident to and necessary in connection with the carrying out of such purposes.

SECTION 11. FUNCTIONAL PLANNING REQUIREMENTS. -

Planning responsibilities of the corporation shall include but not be limited to:

(1) The preparation of a functional level solid waste management plan which will indicate the location, type, and size of transfer stations, processing facilities, resource recovery facilities, and ultimate disposal facilities which will be required to best serve the future needs of the state and its municipalities,

(2) Said plan will be subject to the review and approval of state planning council;

(3) Said plan will be updated as required;

(4) In developing said plan, the corporation will assure that:

a. The orderly extension of future solid waste facilities and management systems are provided for in a manner consistent with the needs and plans of the whole area, and in a manner consistent with state department of health rules and regulations for locating and operating such facilities;

b. All aspects of planning, zoning, population estimates, engineering and economics are taken into consideration so as to delineate with all practical precision those portions of the area which may reasonably be expected to be served by a solid waste facility of the corporation within a given time frame, as determined by the corporation;

c. Appropriate time schedules are set for the phasing in of the required component parts of the system;

(5) In the interim period prior to the completion of the functional plan, the corporation is authorized to construct component facilities as may be required to carry out the purposes of this act providing, however, that such component facilities are integrated and otherwise made consistent with the findings of the plan when it is completed and providing further that three years after the passage of this act, all such activities of the corporation will be based on and will be consistent with the completed plan that has been approved by the state planning council.

SECTION 12. POWERS OF THE DEPARTMENT OF HEALTH. -

Upon passage of this act sections 23-46-1 sub-sections (b)2, (c)3, 23-46-2 and 23-46-5, of the general laws as amended are repealed. Nothing else contained herein shall be construed to affect the powers granted to the department of health pursuant to chapters 23-1, and 23-46 of the general laws as amended. Further any solid waste facilities under the jurisdiction of the corporation shall be subject to the regulatory and enforcement activities of said health department.

SECTION 13. MUNICIPAL PARTICIPATION IN STATE PROGRAM. -

It shall remain the prerogative of the municipalities in the state as to whether they avail themselves of the state facilities as they are made available by the corporation as herein provided for or make their own disposal arrangements independent of the state system, provided, however, that such arrangements are accomplished within their own municipal boundaries and that they are approved by the department of health. In the event that a municipality finds that it cannot properly dispose of its solid waste within its own boundaries it will be obligated to utilize a system or facility made available by the corporation as provided under this act, provided, however, that municipal contracts existing at the time of passage of this act, are excepted from this requirement until expiration of said contract. The corporation on its part is obligated to provide suitable and appropriate assistance to such communities under such circumstances.

SECTION 14. EMINENT DOMAIN POWER. -

The corporation shall have the right to acquire any land or any interest therein in its own name, by the exercise of the power of eminent domain, whenever it shall be determined by the corporation that the acquisition of such land, or interest therein, is necessary for the construction or operation of any project providing, however, that:

(1) The necessity for such action shall be conclusively presumed upon the adoption by the corporation of a resolution declaring that the acquisition of the land or of the interest therein, described in such resolution, is necessary for such construction or operation. Within such construction or operation. Within six (6) months thereafter, the corporation shall cause to be filed in the land evidence records of the city or town in which the land is located, a copy of such resolution of the corporation, together with a plat of land, or interest therein described, and a statement, signed by the chairman of the corporation, that such lands or interests therein, are taken pursuant to the provisions of this chapter. Thereupon the corporation shall file in the superior court in and for the county in which the land, or interest therein, lies, a statement of the sum of money estimated by the corporation to be just compensation for the land taken;

(2) Upon the filing of the copy of such resolution, plat and statement in the land evidence records of such city

or town, the filing in the superior court, of the statement, and the depositing in the superior court, to the use of the persons entitled thereto, of such sum as the court shall determine to be amply sufficient to satisfy the claims of all persons interested in said land (and the court may, in its discretion, take evidence on the question to determine the sum to be deposited), title to such land, or interest therein, shall vest in the corporation in fee simple absolute and the corporation thereupon may take possession of said land, or interest therein.

(3) No sum so paid into the court shall be charged with clerk's fees of any nature. After the filing of such copy, plat and statement, notice of the taking of such land, or interest therein, shall be served upon the owners of and persons having an estate in and interested in such land by the sheriff or his deputies of the county in which the land, or interest therein, lies, leaving a true and attested copy of such description and statement with each of such persons personally, or at their last and usual place of abode in this state with some person living there, and in case any of such persons are absent from this state and have no last and usual place of abode therein occupied by any person, such copy shall be left with the persons, if any, in charge or or having possession of such land,

or interest therein, taken of such absent persons if the same are known to said officer; and after the filing of such resolution, plat and statement, the secretary of the corporation shall cause a copy of such resolution and statement to be published in some newspaper published in the county where said land, or interest therein, may be located, at least once a week for three (3) successive weeks. If any person shall agree with the corporation for the price of the land, or interest therein, so taken, the court upon the application of the parties in interest, may order that the sum agreed upon be paid forthwith from the money deposited, and the just compensation to be awarded in said proceeding.

(4) Any owner of or persons entitled to any estate in or interested in any part of the land, or interest therein, so taken, who cannot agree with the corporation for the price of the land, or interest therein, so taken in which he is interested as aforesaid, may, within three (3) months after personal notice of said taking, or, if he has no personal notice, may within one (1) year from the first publication of the copy of such resolution and statement, apply by petition to the superior court in and for the county in which such land, or interest therein, lies, setting forth the taking of his land or interest therein, and paying for an assessment of damages by a

jury. Upon filing of such petition the said court shall cause twenty (20) days' notice of the pendency thereof to be given to the corporation by serving the chairman or vice-chairman of the corporation with a certified copy thereof, and may proceed after such notice to the trial thereof; and such trial shall determine all questions of fact relating to the value of such land, or interest therein, and the amount thereof, and judgment shall be entered upon the verdict of such jury and execution shall be issued therefor against the money so deposited in court and in default thereof against any other property of the corporation. In case two or more conflicting petitioners make claim to the same land, or to any interests therein, or to different interests in the same parcel of land, said court upon motion shall consolidate their several petitions for trial at the same time by the same jury, and may frame all necessary issues for the trial thereof; and all proceedings taken pursuant to the provisions of this chapter shall take precedence over all other civil matters then pending before said court, or if the superior court in and for the county in which such land, or interest therein, lies, be not in session in such county, then the same may be heard in the superior court for the other counties of the state.

(5) If any lands, or interests therein, in which any infant or other person not capable in law to act in his own behalf is interested, are taken by the corporation under the provisions of this chapter, said superior court, upon the filing therein of any such petition by or in behalf of such infant or other person, may appoint a guardian ad litem for such infant or other person, and such guardian may appear and be heard in behalf of such infant or other person; and such guardian may also with the advice and consent of said superior court and upon such terms as said superior court may prescribe release to the corporation all claims for damages for the lands of such infant or other person or for any such interests therein. Any lawfully appointed, qualified and acting guardian or other fiduciary of the estate of any such infant or other person, with the approval of the court of probate within this state having jurisdiction to authorize the sale of lands and priorities within this state of any such infant or other person, may, before the filing of any such petition, agree with the corporation upon the amount of damages suffered by such infant or other person by any taking of his lands or of his interests in any lands, and may, upon receiving such amount, release to the authority all claims of damages of such infant or other person for such taking.

(6) Whenever, from time to time the corporation has satisfied the court that the amount deposited with the court is greater than is amply sufficient to satisfy the claims of all persons interested in said land, the court may order that the amount of any such excess including any interest or increment on any sums so deposited shall be repaid to the authority. Whenever the corporation has satisfied the court that the claims of all persons interested in the land taken have been satisfied, the unexpended balance including any interest or increment on any sums so deposited shall be paid forthwith to the corporation.

(7) In any proceedings for the assessment of compensation and damages for land or interest therein taken or to be taken by eminent domain by the corporation the following provision shall be applicable: at any time during the pendency of such action or proceeding, the corporation or an owner may apply to the court for an order directing an owner or the corporation as the case may be, to show cause why further proceedings should not be expedited, and the court may upon such application make an order requiring that the hearings proceed and that any other steps be taken with all possible expedition.

SECTION 15. BONDS AND NOTES. -

(a) (1) The corporation shall have power and is hereby authorized to issue from time to time its negotiable notes and bonds in such principal amount as the corporation shall determine to be necessary to provide sufficient funds for achieving any of its corporate purposes, including the payment of interest ~~ent~~ on notes and bonds of the corporation, establishment of reserves to secure such notes and bonds including the reserve funds created pursuant to section 14 hereof, and all other expenditures of the corporation incident to and necessary or convenient to carry out its corporate purposes and powers.

(2) The corporation shall have the power, from time to time, to issue (i) notes to renew notes and (ii) bonds to pay notes, including the interest thereon and, whenever it deems refunding expedient, to refund any bonds by the issuance of new bonds, whether the bonds to be refunded have or have not matured, and to issue bonds partly to refund bonds then outstanding and partly for any of its corporate purposes.

(3) Except as may otherwise be expressly provided by resolution of the corporation, every issue of its notes and bonds shall be general obligations of the corporation payable out of any revenues or moneys of the corporation, subject only to any agreements with the holders of particular notes or bonds pledging any particular revenues.

(b) The notes and bonds shall be authorized by resolution or resolutions of the corporation, shall bear such date or dates and shall mature at such time or times as such resolution or resolutions may provide, except that no bond shall mature more than twenty years from the date of its issue. The bonds may be issued as serial bonds payable in annual installments or as term bonds or as a combination thereof. The notes and bonds shall bear interest at such rate or rates, be in such denominations, be in such form, either coupon or registered, carry such registration privileges, be executed in such manner, be payable in such medium of payment, at such place or places within or without the state and be subject to such terms of redemption as such resolution or resolutions may provide. The notes and bonds of the corporation may be sold by the corporation, at public or private sale, at such price or prices as the corporation shall determine.

(c) Any resolution or resolutions authorizing any notes or any issue thereof may contain provisions, which shall be a part of the contract or contracts with the holders thereof, as to:

(1) pledging all or any part of the revenues of the corporation to secure the payment of the notes or bonds or of any issue thereof, subject to such agreements with noteholders or bondholders as may then exist:

(2) pledging all or any part of the assets of the corporation, to secure the payment of the notes or bonds or of any issue of notes or bonds subject to such agreements with noteholders or

bondholders as may then exist;

(3) the setting aside of reserves or sinking funds and the regulation and disposition thereof;

(4) limitations on the purpose to which the proceeds of sale of notes or bonds may be applied and pledging such proceeds to secure the payment of the notes or bonds or of any issue thereof;

(5) limitations on the issuance of additional notes or bonds; the terms upon which additional notes or bonds may be issued and secured; and the refunding of outstanding or other notes or bonds;

(6) the procedure, if any, by which the terms of any contract with noteholders or bondholders may be amended or abrogated, the amount of notes or bonds the holders of which must consent thereto; and the manner in which such consent may be given;

(7) limitations on the amount of moneys to be expended by the corporation for operating expenses of the corporation;

(8) vesting in a trustee or trustees such property, rights, powers and duties in trust as the corporation may determine, which may include any or all of the rights, powers and duties of the trustee appointed by the bondholders pursuant to this act and limiting or abrogating the right of the bondholders to appoint a trustee under this act or limiting the rights, powers and duties of such trustee;

(9) defining the acts or omissions to act which shall constitute a default in the obligations and duties of the corporation to

the holders of the notes or bonds and providing for the rights and remedies of the holders of the notes or bonds in the event of such default, including as a matter of right the appointment of a receiver; provided, however, that such rights and remedies shall not be inconsistent with the general laws of the state and the other provisions of this act; and

(10) any other matters, of like or different character, which in any way affect the security or protection of the holders of the notes or bonds.

(d) Any pledge made by the corporation shall be valid and binding from the time when the pledge is made; the revenues, moneys or property so pledged and thereafter received by the corporation shall immediately be subject to the lien of such pledge without any physical delivery thereof or further act, and the lien of any such pledge shall be valid and binding as aginst all parties having claims of any kind in tort, contract or otherwise against the corporation, irrespective of whether such parties have notice thereof. Neither the resolution nor any other instrument by which a pledge is created need be recorded.

(e) Neither the commissioners or executive director of the corporation nor any other person executing such notes or bonds shall be subject to any personal liability or accountability by reason of the issuance thereof.

(f) Bonds or notes may be issued under the provisions of this act without obtaining the consent of any department, division, commission, board, body, bureau or agency of the state, and without any other proceedings or the happening of any conditions or things other than those proceedings, conditions or things which are specifically required by this act and by the provisions of the resolution authorizing the issuance of such bonds or notes or the trust agreement securing the same.

(g) The corporation, subject to such agreements with noteholders or bondholders as may then exist, shall have power out of any funds available therefor to purchase notes or bonds of the corporation, which shall thereupon be cancelled, at a price not exceeding:

(1) if the notes or bonds are then redeemable, the redemption price then applicable plus accrued interest to the next interest payment thereon, or

(2) if the notes or bonds are not then redeemable, the redemption price applicable on the first date after such purchase upon which the notes or bonds become subject to redemption plus accrued interest to such date.

(h) In the discretion of the corporation, the bonds may be secured by a trust indenture or trust indentures by and between the corporation and a corporate trustee, which may be any trust company or bank having the power of a trust company within or without the state. Such trust indenture may contain such provisions for protecting and enforcing the rights and remedies of the bondholders as may be reasonable and proper and not in violation of law, including covenants setting forth the duties of the corporation in relation to the exercise of its corporate powers and the custody, safeguarding and application of all moneys. The corporation may provide by such trust indenture for the payment of the proceeds of the bonds and revenues to the trustee under such trust indenture or other depository, and for the method of disbursement thereof, with such safeguards and restrictions as it may determine. All expenses incurred in carrying out such trust indenture may be treated as part of the operating expenses of the corporation. Such trust indenture may limit or abrogate the right of the holders of any bonds, bond anticipation notes or other obligations of the corporation to appoint a trustee under this act or limit the rights, powers and duties of such trustee.

(i) Whether or not the notes and bonds are of such form and character as to be negotiable instruments under the terms of the Rhode Island uniform commercial code, the notes and bonds are hereby made negotiable instruments within the meaning of and for all the purposes of the Rhode Island uniform commercial code, subject only to the provisions of the notes and bonds for registration.

(j) In case any of the commissioners, executive director or officers of the corporation whose signatures appear on any notes or bonds or coupons shall cease to be such commissioners, executive director or officers before the delivery of such notes or bonds, such signatures shall, nevertheless, be valid and sufficient for all purposes, the same as if such commissioners, executive director and officers had remained in office until such delivery.

SECTION 16. RESERVE FUNDS AND APPROPRIATIONS. -

(1) The corporation may create and establish one or more special funds (herein referred to as "capital reserve funds"), and shall pay into each such capital reserve fund (a) any moneys appropriated and made available by the state for the purpose of such fund, (b) any proceeds of sale of notes or bonds to the extent provided in the resolution or resolutions of the corporation authorizing the issuance thereof, and (c) any other moneys which may be made available to the corporation for the purpose of such fund from any other source or sources. All moneys held in any capital reserve fund, except as hereinafter provided, shall be used, as required, solely for the payment of the principal of bonds secured in whole or in part by such fund or of the sinking fund payments hereinafter mentioned with respect to such bonds, the purchase or redemption of such bonds, the payment of interest on such bonds or the payment of any redemption premium required to be paid when such bonds are redeemed prior to maturity; provided, however, that moneys in such fund shall not be withdrawn therefrom at

any time in such amount as would reduce the amount of such fund to less than the minimum capital reserve requirement established for such fund as hereinafter provided except for the purpose of making with respect to bonds secured in whole or in part by such fund payment when due, of principal, interest, redemption premiums and the sinking fund payments hereinafter mentioned for the payment of which other moneys of the corporation are not available. Any income or interest earned by, or incremental to, any capital reserve fund due to the investment thereof may be transferred by the corportation to other funds or accounts of the corporation to the extent it does not reduce the amount of the capital reserve fund below the minimum capital reserve fund requirement for such fund;

(2) The corporation shall not at any time issue bonds secured in whole or in part by a capital reserve fund, if upon the issuance of such bonds, the amount in such capital reserve fund will be less than the minimum capital reserve fund requirement for such fund, unless the corporation, at the time of issuance of such bonds, shall deposit in such fund from the proceeds of the bonds so to be issued, or from other sources, an amount which, together with the amount then in such fund, will not be less than the minimum capital reserve fund requirement for such fund. For the purposes of this section, the term "minimum capital reserve fund requirement" shall mean an amount of money, as provided in the resolution

or resolutions of the corporation authorizing the bonds or notes with respect to which such fund is established, equal to not more than the greatest of the respective amounts, for the current or any future fiscal year of the corporation, of annual debt service on the bonds of the corporation secured in whole or in part by such fund, such annual debt service for any fiscal year being the amount of money equal to the aggregate of (a) all interest payable during such fiscal year on all bonds secured in whole or in part by such fund outstanding on the date of computation plus (b) the principal amount of all such bonds outstanding on said date of computation which mature during such fiscal year, plus (c) all amounts specified in any resolution of the authority authorizing any of such bonds as payable during such fiscal year as a sinking fund payment with respect to any of such bonds which mature after such fiscal year, all calculated on the assumption that such bonds will after said date of computation cease to be outstanding by reason, but only by reason, of the payment of bonds when due and application in accordance with the resolution authorizing those bonds of all such sinking fund payments payable at or after said date of computation.

(3) In computing the amount of the capital reserve funds for the purpose of this section, securities in which all or a portion of such funds shall be invested shall be valued at par or if purchased at less than par, at their cost to the corporation;

(4) To assure the continued operation and solvency of the corporation for the carrying out of its corporate purposes, provision is made in paragraph (1) of this subdivision for the accumulation in each such capital reserve fund of an amount equal to the minimum capital reserve fund requirements for such fund. In order further to assure such maintenance of the capital reserve funds, the chairman of the corporation shall annually, on or before December 1st make and deliver to the governor his certificate stating the sum, if any, required to restore each such capital reserve fund to the minimum capital reserve fund requirement for such fund. During each January session of the general assembly, the governor shall submit to the general assembly printed copies of a budget including the sum, if any, required to restore each such capital reserve fund to the minimum capital reserve fund requirement for such fund. All sums appropriated by the general assembly, if any, and paid to the corporation shall be deposited by the corporation in the applicable capital reserve fund.

(5) All amounts paid over to the corporation by the state pursuant to the provisions of this section shall constitute and be accounted for as advances by the state to the corporation and, subject to the rights of the holders of any bonds or notes of the corporation theretofore or thereafter issued, shall be repaid to the state without interest from all available operating revenues of the corporation in excess of amounts

required for the payment of bonds, notes or other obligations of the corporation, the capital reserve funds and operating expenses.

(6) The corporation shall create and establish such other funds as may be necessary or desirable for its corporate purposes.

SECTION 17. REFUNDING OBLIGATIONS - ISSUANCE. -

The corporation may provide for the issuance of refunding obligations for the purpose of refunding any obligations then outstanding which have been issued under the provisions of this act, including the payment of any redemption premium thereon and any interest accrued or to accrue to the date of redemption of such obligations and for any corporate purpose of the corporation. The issuance of such obligations, the maturities and other details thereof, the rights of the holders thereof, and the rights, duties and obligations of the corporation in respect of the same shall be governed by the provisions of this act which relate to the issuance of obligations, insofar as such provisions may be appropriate therefor.

SECTION 18. REFUNDING OBLIGATIONS - SALE. -

Refunding obligations issued as provided in section 17 may be sold or exchanged for outstanding obligations issued under this act and, if sold, the proceeds thereof may be applied, in addition to any other authorized purposes, to the purchase, redemption or payment of such outstanding obligations. Pending the application of the proceeds of any such refunding obligations, with any other available funds, to the payment of the principal, accrued interest and any redemption premium on the obligations being refunded, and, if so provided or permitted in the resolution authorizing the issuance of such refunding obligations or in the trust agreement securing the same, to the payment of any interest on such refunding obligations and any expenses in connection with such refunding, such proceeds may be invested in direct obligations of, or obligations the principal of and the interest on which are unconditionally guaranteed by the United States of America which shall mature or which shall be subject to redemption by the holders thereof, at the option of such holders, not later than the respective dates when the proceeds, together with the interest accruing thereon, will be required for the purposes intended.

SECTION 19. REMEDIES OF BONDHOLDERS AND NOTEHOLDERS. - (a) In the event that the corporation shall default in the payment of principal of or interest on any bonds or notes issued under this act after the same shall become due, whether at maturity or upon call for redemption, and such default shall continue for a period of thirty days, or in the event that the corporation shall fail or refuse to comply with the provisions of this act, or shall default in any agreement made with the holders of an issue of bonds or notes of the corporation, the holders of twenty-five per centum in aggregate principal amount of the bonds or notes of such issue then outstanding, by instrument or instruments filed in the office of the secretary of state and proved or acknowledged in the same manner as a deed to be recorded, may appoint a trustee to represent the holders of such bonds, or notes for the purposes herein provided.

(b) Such trustee may, and upon written request of the holders of twenty-five (25) per centum in principal amount of such bonds or notes then outstanding shall, in his or its own name,

(1) enforce all rights of the bondholders or noteholders, and to require the corporation to carry out any other agreements with the holders of such bonds or notes and to perform its duties under this act;

(2) enforce all rights of the bondholders or noteholders, so as to carry out any contract as to, or pledge of revenues, and to require the corporation to carry out and perform the terms of any contract with the holders of such bonds or notes or its duties under this act;

(3) bring suit upon all or any part of such bonds or notes;

(4) by action or suit, require the corporation to account as if it were the trustee of an express trust for the holders of such bonds or notes;

(5) by action or suit, enjoin any acts or things which may be unlawful or in violation of the rights of the holders of such bonds or notes;

(6) declare all such bonds or notes due and payable and if all defaults shall be made good then with the consent of the holders of twenty-five (25) per cemtum of the principal amount of such bonds or notes then outstanding, to annul such declaration and its consequences.

(c) Such trustee shall in addition to the foregoing have and possess all the powers necessary or appropriate for the exercise of any functions specifically set forth herein or incident to the general representation of bondholders or noteholders in the enforcement and protection of their rights.

(d) Before declaring the principal of bonds or notes due and payable, the trustee shall first give thirty (30) days' notice in writing to the governor, to the corporation and to the attorney general of the state.

(e) The superior court of Providence county shall have jurisdiction of any suit, action or proceeding by the trustee on behalf of bondholders or noteholders.

SECTION 20. PLEDGE OF THE STATE. -

The state does hereby pledge to and agree with the holders of any notes or bonds issued under this act that the state will not limit or alter the rights hereby vested in the corporation to fulfill the terms of any agreements made with the said holders thereof or in any way impair the rights and remedies of such holders until such notes and bonds together with the interest thereon, with interest on any unpaid installments of interest, and all costs and expenses in connection with any action or proceeding by or on behalf of such holders, are fully met and discharged. The corporation is authorized to include this pledge and agreement of the state in any agreement with the holders of such notes or bonds.

SECTION 21. CREDIT OF STATE NOT PLEDGED. -

Obligations issued under the provisions of this act shall not be deemed to constitute a debt or liability or obligation of the state or of any political subdivision thereof or a pledge of the faith and credit of the state or of any such political subdivision but shall be payable solely from the revenues or assets of the corporation. Each obligation issued under this act shall contain on the face thereof a statement to the affect that the corporation shall not be obligated to pay the same nor the interest thereon except from the revenues or assets pledged therefor and that neither the faith and credit nor the taxing power of the state or of any political subdivision thereof is pledged to the payment of the principal of or the interest on such obligation.

SECTION 22. NOTES AND BONDS AS LEGAL INVESTMENTS. -

The notes and bonds of the corporation shall be legal investments in which all public officers and public bodies of this state its political subdivisions, all municipalities and municipal subdivisions, all insurance companies and associations and other persons carrying on an insurance business, all banks, bankers, banking institutions including savings and loan associations, building and loan associations, trust companies, savings banks and savings associations, investment companies and other persons carrying on a banking business, all administrators, guardians, executors, trustees, and other fiduciaries, and all other persons whatsoever who are now or may hereafter be authorized to invest in bonds or in other obligations of the state, may properly and legally invest funds, including capital, in their control or belonging to them. The notes and bonds are also hereby made securities which may properly and legally be deposited with and received by all public officers and bodies of the state or any agency or political subdivision of the state and all municipalities and public corporations for any purpose for which the deposit of bonds or other obligations of the state is now or may hereafter be authorized by law.

SECTION 23. CITIZEN ADVISORY BOARD. -

The governor shall appoint from among interested citizens of the state a citizens solid waste management advisory board consisting of five (5) persons. Upon the passage of this act the governor shall appoint one (1) member of said advisory board to serve until the first day of March, 1975, two (2) to serve until the first day of March, 1976, and two (2) to serve until the first day of March, 1977. In the month of February, 1975, and in the month of February each year thereafter, the governor shall appoint a successor to the member of said board whose term shall expire in such year, to hold office commencing on the first day of March in said year of appointment and until the first day of March in the third year after their respective appointments and until their respective successors are appointed and qualified. Any vacancy which may occur in said board shall be filled by the governor in accordance with the original manner of appointment, for the duration of the unexpired term. It shall be the role of said citizens advisory board to give advice to the corporation concerning rules and regulations and legislation affecting solid waste management, resource recovery and recycling within the state; and to study the effects of existing recovery and recycling and to report its findings annually to the governor, and to recommend to the corporation, special studies and projects which it feels are needed to further economic solid waste management, resource recovery and recycling.

SECTION 24. ANNUAL REPORTS. -

The corporation shall, promptly following the close of each fiscal year, submit an annual report of its activities for the preceding year to the governor, state treasurer and the general assembly. Each such report shall set forth a complete operating and financial statement of the corporation during such year. The corporation shall cause an audit of its books and accounts to be made at least once each fiscal year.

SECTION 25. AUTHORIZATION TO ACCEPT APPROPRIATED MONIES. -

The corporation is authorized to accept such monies as may be appropriated from time to time by the general assembly for effectuating its corporate purposes including, without limitation, the payment of the initial expenses of administration and operation and the establishment of reserves or contingency funds to be available for the payment of the principal of and the interest of any bonds, notes or other obligations of the corporation.

SECTION 26. TAX EXEMPTION. -

The exercise of the powers granted by this act will be in all respects for the benefit of the people of the state, for their well being and prosperity and for the improvement of their social and economic conditions, and the corporation shall not be required to pay any tax or assessment on any property owned by the corporation under the provisions of this act or upon the income therefrom; nor shall the corporation be required to pay any recording fee or transfer tax of any kind on account of instruments recorded by it or on its behalf; provided, however, the corporation may direct payments in lieu of taxes to be paid to a city or town in which such properties or facilities are located. Any bonds, notes or other obligations issued by the corporation under the provisions of this act, their transfer, and the income therefrom, (including any profits made by the sale thereof), shall at all times be free from taxation by the state or any political subdivision thereof or other instrumentality of the state, excepting inheritance, estate, and gift taxes.

SECTION 27. SEVERABILITY CLAUSE. -

The provisions of this act are severable and if any provision or part thereof shall be held invalid or unconstitutional or inapplicable to any person or circumstances, such invalidity, unconstitutionality or inapplicability shall not affect or impair the remaining provisions of this act. All acts or parts of acts inconsistent with this act are hereby repealed.

SECTION 28. INJUNCTIVE RELIEF. -

The attorney general of the state of Rhode Island shall have the power to bring an action in the name of the state of Rhode Island in any court of competent jurisdiction for restraining orders and injunctive relief to restrain and enjoin violations or threatened violations of this act. Proceedings under this act shall be instituted and prosecuted in the name of the corporation by the attorney general but only upon the request of the corporation.

SECTION 29. EXEMPTION FROM MUNICIPAL REGULATION. -

Any plant, structure, equipment, and other real and personal property acquired, constructed or operated by the corporation for the purpose of carrying out the provisions of this act shall be exempt from municipal regulations and ordinances.

SECTION 30. APPROPRIATION. -

The sum of one million seven hundred thousand dollars ($1,700,000.00) is hereby appropriated, out of money in the general treasury not otherwise appropriated to carry out the purposes of this act and the state controller is hereby authorized to draw his orders upon the general treasurer for the payment of such sum or as may be deemed necessary from, time to time, upon the receipt by him of properly authenticated vouchers. Said appropriation will be made available to the corporation in the form of loan to be paid back to the state treasury in ten equal annual payments commencing in the calendar year established by the corporation provided, however, that such repayment commences no later than June 30, 1979.

SECTION 30. EFFECTIVE DATE. -

This act shall take effect July 1, 1974.

AN ACT RELATING TO REGIONAL COUNCILS OF LOCAL GOVERNMENT

Section 45-43-3 of the general laws entitled "Regional Councils of Local Government" is hereby amended by adding thereto the following:

> (b) . . . provided, however, that the exercise of such power does not include the creation, construction or operation of new regional solid waste management facilities . . . .

AN ACT RELATING TO HEALTH AND SAFETY AUTHORITIES

Section 45-34-2 of the general laws entitled "Health and safety authorities" is hereby amended to read as follows:

In addition to the powers heretofore granted by any general or public law, any municipality or group of two (2) or more municipalities may individually or collectively pledge the credit of said municipality or groups of municipalities by written agreement with any person for the purpose of providing for such municipality or municipalities real and personal property or other facilities for use in disposal of liquid wastes.

APPENDIX C

AN ACT LICENSING SOLID WASTE MANAGEMENT FACILITIES

It is enacted by the General Assembly as follows:

Section 1. Chapter 23-46 of the general laws of 1956, as amended, entitled "Refuse Disposal", is hereby further amended by adding thereto the following sections:

Section 23-46-7. Definitions.--As used in this chapter the following terms shall, where the context permits, be construed as follows:

(1) The term "solid waste" means garbage, refuse and other discarded solid materials generated by residential, institutional, commercial, industrial and agricultural sources but does not include solids or dissolved material in domestic sewage or sewage sludge.

(2) The term "segregated solid waste" means material separated from other solid waste for reuse.

(3) The term "solid waste management facility" means any plant, structure, equipment, real and personal property, except mobile equipment or incinerators with a capacity of less than 1,000 pounds per hour, operated for the purpose of processing, treating or disposing of solid waste but not segregated solid waste.

(4) The term "person" shall include an individual, firm, partnership, association and private or municipal corporation.

(5) The term "director" shall be held to mean the director of the department of health or any subordinate or subordinates to whom he has delegated the powers and duties vested in him by this chapter.

Section 23-46-8. Licenses.--No person shall operate any solid waste management facility unless a license therefore is obtained from the director. The director shall have full power to make all rules and regulations establishing standards to be met for the issuance of such licenses.

Any person who desires to construct a solid waste management facility or install any equipment in such a facility must first submit to the director for approval plans and specifications and other related data required by him.

Section 23-46-9. License fees.--Any person who desires to operate a solid waste management facility shall apply to the director for a license to do so. Upon approval of the application by the director and receipt of the license fee, a license shall be issued.

The license fee shall be one hundred dollars ($100.00). Licenses shall expire one (1) year from the date of issue, unless sooner suspended or revoked. A license may be renewed at an annual fee of one hundred dollars ($100.00).

Section 23-46-10. Penalties.--Any person who constructs a solid waste management facility or installs equipment in such a facility without first obtaining approval of the plans and specifications for the same or any person who operates such a facility without obtaining a license to do so from the director shall be punished by a fine or not more than five hundred dollars ($500.00) or by imprisonment for not more than thirty (30) days or both such fine and imprisonment, and every person shall be deemed guilty of a separate and distinct offense for each day during which such violation shall be repeated or continued.

Section 23-46-11. Prosecution of violations.--Relief in equity or by prerogative writ.

(1) All prosecutions for the violation of any provision of this chapter or any rule or regulation made by the director in conformance with this chapter shall be by complaint and warrant and shall be made in the district court of the state. The director without being required to enter into any recognizance or to give surety for cost, or the attorney general of his own motion, may institute such proceedings in the name of the state.

It shall be the duty of the attorney general to conduct the prosecution of all such proceedings brought by the director.

(2) The director may obtain relief in equity or by prerogative writ whenever such relief shall be necessary for the proper performance of his duties hereunder. The superior court shall have the jurisdiction in equity to enforce the provisions of this chapter and any rule or regulation made by the director in conformity therewith. Proceedings under this section shall follow the course of equity and shall be instituted and prosecuted in the name of the director by the attorney general, but only upon the request of the director.

Section 2. This act shall take effect on July 1, 1974.